The Builder.

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Art and Society.

DURING last week we heard once more the sound of the *vox clamantis in deserto*, which, at fitful periods and in tones of feverish excitement, either through the mouth of Mr. Ruskin or of one of his followers, proclaims that all is barren, from Dan to Beersheba; that art is dead; that the whole world, artistically speaking, lieth in wickedness, and that yet the end is not. Bad as things are, they may yet,—indeed, almost infallibly will,—become worse, until all pretence of the care for a love of art will have vanished from the earth, and "civilisation will have become extinct." This time it is one of the "minor prophets" (if we may be allowed the invidious distinction which the traditional undergraduate shrank from making) who has disturbed the calm with his ominous ejaculations. A very fine decorative designer, a rather middling poet, and an impossibly Utopian social reformer, Mr. Morris takes his stand, by virtue of these various gifts, on a pedestal overlooking the swarm of misguided humanity beneath him, and tries vigorously to awaken it to a sense of its terrible condition. As in the case of some other preachers who seem less in earnest, the text may vary, but the sermon is always the same. Nominally it has been on one occasion "art and socialism," elsewhere "art and commerce," and in a kind of marginal note we are told that "art and plutocracy" was the title which would have embodied the real and true intent of the discourse. Mr. Morris's audiences have, not quite unreasonably, objected to these phantasmagoric shiftings of the point of view. Both at Oxford and at Wimbledon, it would appear, they came for bread, and got a stone, very hard of digestion to many of them. They were invited to an innocent discourse upon art, and found themselves implicated in assisting at the promulgation of social theories of an abnormal and alarming nature. Several of the newspapers of last week bore witness to the feeling on the part of some of these entrapped persons, that whatever the soundness or unsoundness of Mr. Morris's social theories, people who were invited to hear about art were entitled to expect that the discourse would bear some more direct relation to its title, and that they should at least have a more correct idea given them beforehand as to the kind of gospel that was to be preached to them. Other criticisms have appeared, protesting not merely against the relation of the prophet's lectures to their title, but against the whole scope of the views propounded, as being not merely relatively but absolutely illusory; as involving both a false and unfair estimate of the state of art at the present day, and an utterly mistaken idea as to the means by which, or the circumstances under which, art may possibly be revived from its present assumed state of torpidity, and led forth upon a new course of triumph. To complain, as Mr. Morris does, that machinery has taken the place of hand labour, is, according to such critics, to ignore the whole necessities and conditions of modern life, and to contradict the whole experience of the past, which shows that in every great artistic period the artist has worked in accordance with the conditions of life of his own day, accepting them and turning them to account; not sighing after an imagined state of things which might have given him happier and more inspiring conditions to work under, but thinking, feeling, and producing as an artist of his own day addressing himself to the men of his own day,—to their tastes, needs, and aspirations.

It does not appear to us that the truth of the matter is so decisively on the side either of Mr. Morris or his critics as they respectively suppose. As to the immediate complaints of Mr. Morris's audiences, to begin with, it may be said that persons who go to hear lectures on "art" simply, and find that the lecturer has something to say to them about the relation between art and the social conditions of life amid which that art is produced, are really getting something more and something deeper than they bargained for or were promised. The onus of the complaint seems to have been, in fact, not that Mr. Morris should have mingled social topics with art, and implied a close relation between the two, but that his conclusions on the subject went against the grain of many of his hearers. Some of them were social Conservatives, and heard that the revival of art could only be accomplished by a democratic revolution. Some of them were probably vitally interested in commerce, and were told that commerce had ruined art. Against this they rebelled. Why should such uncomfortable things be said to them, in the name of so apparently light and innocent a subject as art-criticism? It is the old cry which was raised against a prophet long ago, "Prophesy smooth things to us; prophesy deceits."

Mr. Morris, we feel sure, will not at least obey the latter part of the demand. We are quite sure that he thoroughly believes what he says, and will not say what he does not believe. But whether his position is in the abstract actually true, is quite another question. Broadly speaking, his criticism involves two main propositions: that the love of beauty or of art is almost entirely dead at present; that the division of labour in the workshop, owing to competition for commercial profit, has destroyed all individual interest and pleasure of the workman in his work, and consequently all artistic feeling; and that the middle classes live in a state of vulgar desire for mere luxury and material comfort, without any care for art for its own sake. The other main proposition is, that the remedy for this state of things is the abolition of the capitalist and the establishment of a socialist democracy, in which each man shall work "for his own hand," feel individual interest in his work, and get individua credit for it.

The first question is, whether artistic feeling and artistic power at the present day are really so torpid or non-existent as Mr. Morris says. One of his critics, a well-known writer on art, in a letter to the columns of a daily paper, denied the fact *in toto* both as to "the higher" and the minor arts, and asserted that there had seldom been a time when the former, "especially architecture and painting, were distinguished by more refinement and originality of treatment than at present," or in which a greater advance had been made in the improvement of taste and culture in regard to minor decorative arts. Mr. Eastlake's proposition appeared (for the wording of his letter was a little vague) to refer to progress within the period of the last twenty-five years. We very much doubt whether the proposition can quite be maintained, even in regard to the progress of the last quarter of a century. Painting makes the best show, and we have a certain amount of painting produced which is of real interest, some which is the work of manifest genius. The drawback, to our thinking, is a sense of unreality about it, of the assumption of a mood and a style not really springing out of the spontaneous thought and association of our own day.

> "Our men scarce seem in earnest now;
> Distinguish'd names; but 'tis somehow
> As if they play'd at being names
> Still more distinguish'd."

Nor can we discern that architecture has made any real stride since a quarter of a century back, except in an increased perception of the importance of practical considerations of plan and structure; and those, though the basis of the art, are hardly in themselves art so much as science. In regard to decorative art there is a little more to be said against Mr. Morris's pessimism. There certainly has been a very marked advance in general taste and feeling in regard to decoration, furniture, &c., during the last quarter of a century,—an advance to which Mr. Morris himself has contributed no unimportant part of the impulse; and there is something almost odd in finding him now standing up and denying the existence or the value of a movement in which he has himself been a good deal concerned. His statement, that there is any considerable section of London society, of whatever grade, which

"delights in dirt and squalor" is simply absurd; there are people who, having perhaps many sources of happiness in domestic life or in books and other studies, put up with the ugliness of parts of London more contentedly than Mr. Morris would wish them to do. There is such a thing as a spirit of "wholesome discontent," no doubt, but it does not answer to give too unchecked range to this frame of mind. Mr. Morris's charge against the middle classes, again, that they "live in swinish comfort," indifferent to beauty, is certainly greatly overdrawn. It is not absolutely untrue, but it is only true in this way, that many people, especially those who have recently become rich, have no really *intelligent* interest in the decoration of their homes. They do want to have things in good taste about them; they will pay a good deal of money to procure what they believe to be beautiful things; but they follow it as a fashion, and accept as good taste what others accept, not from genuine feeling or independent judgment. This is not a satisfactory state of things, certainly; it has led to taste becoming a fashion, and to the repetition in house after house of the same style of "æsthetic" furniture, not so much because individual owners actually want that particular thing for their own satisfaction, but because they do want to have things in good taste, and they accept what appears to be recognised as the right thing. It is a very unintelligent form of artistic taste; but still it is not quite the same thing as living in "swinish comfort" (a rather uncourteous expression to throw at the heads of respectable people), and it does represent a certain desire for what is beautiful rather than for what is ugly.

But when Mr. Morris speaks of machinery having superseded hand-labour, and the deplorable effect of this upon art, he is on much stronger ground, artistically at all events. To say that we cannot help this is one thing; to say that it makes no real difference is another. All decorative art, all art of any kind indeed, is expression, the endeavour of the artist to put the expression of his own feeling and his own enjoyment of his work into the form of his productions. Among the many truths which stand as gems amidst Mr. Ruskin's often wild and questionable theories, none is more true than that there can be no art except where the workman takes pleasure in his art. The artistic form is the expression of his pleasure. Just as music is expression in sound, and therefore nothing can ever be music which is ground out of a machine such as those which infest our London streets, so artistic design of every kind is expression in form, and nothing can be called art-work which is produced by machinery at so much per gross or per square yard. The workman can take no delight in it for its own sake; the making of it is mere drudgery, the result is a mere pretence. But in the present crowded state of society it is of no use to cry out against machinery; a remark which, indeed, seems almost a truism to all but such fervid imaginations as those of Mr. Ruskin and his followers. As far as art is concerned, the real conclusion from the premises is, do not use machinery for the wrong things. A great many things which are wanted in large quantities for practical use must be turned out by machinery; they are best done by machinery, and to fall back on doing them by hand would mean a return from wealth to poverty, to sheer unproductive waste of time and labour. But ornament, decoration, art of any kind, is a thing which cannot be done by machinery, to be of any value at all. It is not by any means a necessity, it is not even a possibility, that all people should be employed in work which they enjoy for its own sake. Happy are those who are so employed; but there are many workers, not only among the so-called "working-classes," who must of necessity be employed in work which is wanted, and which is honest labour useful to the community, but which is not enjoyable for its own sake. In such case the happiness must be looked for in the honest and conscientious performance of the work, in the spirit which, according to George Herbert's quaint old verse, puts a beauty into the humblest labour:—

> "Who sweeps a room, as to Thy laws,
> Makes that, and the action, fine."

In the broad sense, that is perhaps the artistic spirit; to do that which we are doing as well as possible. But in the more direct and usual sense of the word "art," it must be recognised that it is a thing which cannot be produced by machinery, which must represent individual taste and individual intellect; and society should learn the lesson in regard to this,—do not order any ornament that is machine-made and machine-repeated, for that is only a ghastly pretence of being something which it is not. If you cannot pay for ornament which is really individual design, do without ornament, rather than foster a sham.

And this leads to the one comment we can make upon Mr. Morris's panacea for reviving art,—Socialism. In one sense his conclusion is against nearly all the experience or example of the past. The greatest artistic works have been produced at the bidding of rich dignitaries who paid high for the genius of the artist. It may seem a prosaic conclusion, but history shows it to be a true one; just as history shows that art and morality have had, and may have practically, no close relation to one another. Look at the morals of the great Italian Renaissance period,—in every sense of the word "morality," political and social; and then look at its art. That one comparison should put an end to all high-flown theories about art and morality, and their supposed intimate relation. But there is this one way in which socialism in a certain sense is favourable to art, viz., in establishing the principle that the workman should have personal credit for his work. It may be that we cannot conveniently do without the existence of large employers of labour even in the matter of producing decorative work. It is a matter of centralisation and concentration for public convenience and saving of time; more than that, it is often a matter of finding opportunities for an individual workman who could not find or make them for himself, but who can do beautiful work if the opportunity is brought to him. But all such artists grouped under one establishment should have personal credit for their own individual work, where it is really artistic work. A "Company" cannot really make design; the design is made by A or B, and A or B should have the credit of it. So far we may go with Mr. Morris in the direction of socialism, with a clear conscience.

SYRIAN DISCOVERY.

In a short preface to this work,* contributed by Mr. Glaisher, F.R.S., the Chairman of the Executive Committee of the Palestine Exploration Fund (for which body the volume is published), we are told that "while he was waiting for the arrival of his instruments and his surveyors, Captain Conder utilised his time by taking a journey in search of the long-lost Kadesh, the sacred city of the Hittites. What he found, and how he found it, is here told." How, subsequently, on commencing the survey of Moab, "he was ordered back by the Turkish officials, and how he succeeded, while being forced out of the country, in securing the survey of 500 square miles, may also be learned from these pages." The points most cognate to our ordinary subjects of discussion that occur in the twelve chapters which form the volume are those that concern the light thrown on ancient sites and ancient architecture by the exploration, and the large amount of information which has been garnered up as to rude stone monuments, and the menhirs and dolmens of Eastern Syria.

Originating in springs issuing from a bare sloping hill to the east of the little village of Lebweh, the Orontes runs in a northerly direction, approximately parallel to the line of the Syrian coast, through a mountain valley to Antioch, where it turns at right angles to the west; falling into the Mediterranean at a point which was selected by the Greek kings of Syria as the site of their great war port of Seleucia. In some hitherto unknown locality, on the upper part of the course of the Orontes, formerly stood Kadesh, the holy city; the capital of the Kheta, or Hittites, a warlike race of Northern Syria, which, in the year 1361 B.C., was attacked by the famous Egyptian monarch, Rameses Miamun. "On the walls of the Rameseum at Thebes is a picture of Kadesh, and again at Abu Simbel, not far north, is a battle picture containing 1,100 figures, and measuring 57 ft. by 25 ft. From these contemporary records it is possible to draw very definite conclusions concerning the situation of the town."

"In the picture of the Rameseum, Kadesh is seen surrounded on all sides by a double ditch, with bridges on the east and west, but the bas-relief is unfortunately injured close to the city walls on the spectator's right. In this picture the Hittites and their allies are represented as distinct races, with different kinds of weapons. The one race is bearded, the other beardless; and in the Abu Simbel picture the Chinese-like appearance of the Hittites, who have long pig-tails, is very remarkable. They are of a light red colour, with high caps. Kheta Sar, the Hittite king, is elsewhere represented with curled hair and beard; and in certain bas-reliefs with Hamathite or Hittite inscriptions, figures appear with curled slippers like those common once among the Turks, and shown on Assyrian monuments as distinctive of Armenian tribes."

The local features represented in the Egyptian mural record are recognised by Captain Conder as characteristic of a great mound, from 50 ft. to 100 ft. high, and abont 400 yards long, called Tell-neby-Mendeh, to ruins on the south slope of which the name Kades is still applied by the inhabitants of the district. "Looking down from the summit of the Tell we perceived that the site was surrounded with water, just as in the Egyptian representations of Kadesh. The Orontes flows east of the Tell, and is dammed with a broad, flat bulwark of masonry, part of which, at least, is modern, since a stone with a Greek inscription is built in." For further particulars and for the comparison between the Egyptian records and the details of the locality we refer the reader to the work itself. It is hoped that excavations on the site may hereafter secure important results.

Of somewhat more practical importance to the future of Eastern commerce than the recovery of the topography of the second millennium before the Christian era, are the observations made with reference to the possibility of constructing a railway from Tripoli, the best harbour on the Syrian coast, to Homs, on the upper part of the Orontes, and thence to Antioch and Aleppo. To gain light on this important problem, Captain Conder returned from Homs, which he characterises as a black town of basalt, by the valley of the Eleutherus to Tripoli, a distance of fifty miles. Homs is situated at a level of about 1,500 ft. above the sea. But the pass west of the Koteineh Lake, through which the line of road must run, is some 500 ft. higher, involving a rise of about 2,000 ft. in rather more than thirty miles, or a gradient of about 1 in 78. Over such an incline only one-fourth of the weight which could be drawn at the speed of thirty-five miles an hour on a level railway, could be tediously hauled up, at a speed of ten miles an hour, by an equal amount of locomotive power. The check thus imposed on the utility and carrying power of a railway is of an almost prohibitive description. In fact, the true difficulty of the case is thus very much under-stated, as the greater part of the ascent named has to be accomplished in a distance of less than ten miles, which gives a gradient twice as steep as the mean gradient of the Semmering, the Poretta, and the Giovi passes of the Alps, being, indeed, beyond the practical limit of locomotive power. Added to this, the district west of the lake consists entirely of very hard black basalt, and "the same formation occurs in the pass north of Lebanon, the valley of the Eleutherus river. Thus considerable cuttings would be necessary, and would have to be blasted through the hard rock. This would very greatly increase the expense of the line; and it is not by any means clear that a better system for railways would not be to make parallel lines along the coast, and along the plains east of Lebanon, with a cross communication up the valley of the Orontes, by Antioch from the Bay of Seleucia inland to Aleppo, and across to the Euphrates." It is interesting to see this confirmation, drawn from actual observation of the ground, of the opinion expressed by the writer of the article on "The Road to India," in the *Edinburgh Review* for January, 1879. "From Tripoli," says the reviewer, "it would be necessary to follow the coast northwards for about twenty-two miles, as far as the mouth of the Nahr-el-Kebir river (the Eleutherus), and thence to follow the course of that river up to the plateau which divides its source from that of the Orontes, accompanying the course of that river, to Homs, which is 1,500 ft. above the sea. But this route to Aleppo is 120 miles longer than that from Sonedia (at the mouth of the Orontes), a consideration which alone is decisive as to a

* Heth and Moab: Explorations in Syria in 1881 and 1882. By Claude Reignier Conder, R.E. London: Bentley. 1883.

mail route." Considering the extreme vagueness of the propositions, for the verification of which the English public are so often and so lightly asked to find money, it is important to place on record these positive facts; conclusive as they are against the claims of Tripoli to be considered as a future *tête de pont* on the road to India.

The discoveries of numerous dolmens, menhirs, and stone circles in Moab, described in chapter viii., lead to the culminating interest of the identification of the points of mountain outlook referred to in Chapters xxii. and xxiii. of the Book of Numbers, and to the previously unimagined fact that each of these spots is the centre of a system of rude stone erections. On "Mount Nebo, a well-defined dolmen was found north-west of the flat ruined cairn which marks the summit of the ridge. The cap stone was very thick, and its top is some 5 ft. from the ground . . . On the south slope of the mountain there is a circle about 200 ft. in diameter, with a wall 12 feet thick, consisting of small stones piled up in a sort of vallum. At least one other dolmen is still standing on this side of the mountain." "To say," concludes the discoverer of these most interesting relics, "that we still find the altars of Balak standing on Nebo may be premature. To point out the great dolmen at Amman as the throne" (mistranslated bed-stead) "of Og, may be considered fanciful by some; but we may at least claim that we find structures which seem to resemble the early altars and pillars mentioned in Scripture still existing at places which, on entirely independent grounds, may be identified as representing the Mizpeh of Jacob, and the holy mountains of Nebo, Baal, and Peor, while in Judah not a single dolmen now remains standing, because in their zeal for the faith of Jehovah the good kings, Hezekiah and Josiah, swept away for ever the "tables of Gad."

The archæological world will look with interest for the publication of the particulars of the 700 rude stone monuments discovered within an area of 500 miles; for the "volume of notes, plans, and drawings," and for the "forty photographs taken by Lieutenant Mantell." One reflection arises from so much as the volume before us tells of the dolmen circles of Eastern Syria, to which we have not now sufficient space to do justice. It is to the effect that in the combination of menhir, dolmen, and circle, which is a characteristic of the whole of this newly-discovered rude stone province, we have an early adumbration of that form of temple architecture which subsequently was developed with such splendour, as well as with such invariable consistency. In the menhir, the dolmen, and the circle, we have the rudiments of the hypæthral altar, the *cella*, and the *temenos*, or sacred enclosure. Of the early significance of these three elements we have not now to speak. One point, however, may be noticed, and that is, that the removal of the menhir from a central position in the system to the place of an outlying pointer, as at Stonehenge, seems to indicate an advance in astronomical knowledge, or, at all events, in the connexion between astronomy and sacred rites. When few means existed for the measurement of time, the indication of the longest or the shortest day by the amplitude of sunrise and of sunset, measured by a fixed stone, seen from the *cella*, or from the interior of a circle, had a practical value, to which it would be easy to attach a religious sanction. And this is consistent with the view that astrolatry is later in its origin than the earliest forms of Nature worship. The hollows, for oil or for blood, found in many of the monuments, point to a time when there was no very distinct line drawn between an altar and an idol, the same gigantic monolith or trilithon being at once the object of veneration and the site of sacrifice or offering. The subject is a very large one, and the new light now thrown on it may hereafter tell us very much as to the prehistoric growth of architecture. Already there is enough known to render intelligible some of the most curious passages in the treatise, "Aboda Sara" of the Mishna. "Rabbi Ismael decided" ("Aboda Sara, iv. 1") "three stones, of which two are placed side by side below, and the third lies on them, if they are near a statue of Mercury, are forbidden, but two are allowed." And it is added that the three stones,—in fact, the trilithon,—are in honour of Mercury, to whom never less than three were erected. Again, the sages say that the heaps of stones which are found where the statue of Mercury can be seen are prohibited." The fact that the cairns are now found to mark the spot where a dolmen, menhir, or sacred site became visible, is explanatory of these passages. The worship of a deity symbolised by a pillar or standing stone is spoken of as "throwing a stone to Mercury," and the custom of adding a stone to these cairns of an ancient rite has not even yet altogether died out. Buxtorff speaks of the trilithon as Beth Kolim, the House of Kolim,—part of the word *marcolim*, which is usually translated Mercury. Without going into more detail, the indications thus afforded of the character of the trilithon are suggestive of the identity of the menhir with the image of the deity in whose honour the dolmen was reared.

The manner in which the stone monuments are referred to in this important treatise of the oral law, as connected with a contemporary idolatry, is rendered very striking by the discovery of such important examples of the pillars, altars, circles, and cairns at the very spots described in the Pentateuch as devoted to the worship of Baal and of Peor. The word *marcolim* is probably only an Aramaic transliteration of Mercury, so well known as a terminal figure, or pillar God, and thus very closely identified with the menhir. The expression Beth Kolim is still more striking, as (though it is not to be confounded with the Bath Kol, or voice heard in the temple) it is suggestive of the idea that these ancient monuments were regarded as the abodes of oracles, and that the gods of the Moabites, down to a late period in the history of Syria, were inquired of by their worshippers at those long-hallowed spots where ancient prophets and kings had reared seven altars, and sacrificed on every altar a bullock and a ram, the channels for the blood of which have not yet been obliterated by the weather, after a lapse of more than 3,500 years.

AN AMATEUR ARCHITECT OF THE TIME OF QUEEN ELIZABETH.

THE little treatise in two parts on "The Elements of Architecture, by the curious pencil of the ever-memorable Sir Henry Wotton, kt., late Provost of Eton College," is interesting in relation to the author and to the time when it was written, and is indeed not undeserving of perusal on its own account. It seems to have been first published in 1651 in the collection of his miscellaneous,—very miscellaneous,—productions, with a sketch of his life, by his attached friend and fellow fisherman, Izaak Walton. He was born in 1568, a member of a Kentish family which had maintained strong footing in every Royal Court at least since Edward IV. At thirty years of age he returned to England from foreign travel an accomplished gentleman, and became the familiar friend, and then a secretary, of the Earl of Essex when at the height of favour with Queen Elizabeth. King James appreciated some earlier services as well as his familiarity with Europe and its languages, and gave him important diplomatic employment, especially as Ambassador to the Venetian Republic.

It was his prolonged sojourn in Italy that led him to the studies that we are principally concerned with. Of his poems, the Character of a Happy Life, "How happy is he born and taught, &c.," is the best known, but there are others also which confirm his title to a laurel crown. "I found it," he says, "less presumptuous for me, who have long contemplated a famous Republic, to write now of architecture, than it was anciently for Hippodamus the Milesian [Arist., pol. 2, c. 6] to write of Republics, who was himself but an architect." He decides to treat the subject by the logical rather than the historical method, as the shortest and most elemental, and also the soundest," and he enunciates a principle which is indeed worthy of wide application; "though in practical knowledge every complete example may bear the credit of a rule, yet, peradventure, rules should precede, that we may by them judge of examples."

His essay has various points of interest in the historical illustration of the condition of architectural theory as well as practice in his time, whether in England or in Italy. His notions of Gothic architecture are those which remained in vogue long after, and his bad taste in this respect is also combined with unusually false ideas as to the constructive values of circular or pointed arches.

He recites a variety of cautions as to choice of site for a mansion, avoidance of fogs, exhalation from fens, and, taught by Italian experience, "mineral exhalation simply from the soil," want of sun or circulation of air, scarcity of water, of fuel, inaccessibility by land or navigable river or sea. Furthermore, the consideration of some circumstances, he says, is urged by those who seem a little astrological, who warn us from places of malign influence; such as are subject to inconveniences that "are frequent without any evident cause." Astrology should scarcely have been required to enforce a warning against sites subject to earthquakes, or contagions, or even prodigious births, if we include deformities, cretinism, &c. But it was wiser to avoid such localities, at any rate; even the credulous were to be congratulated who were deterred by a supposition of astrological reasons, rather than those who might be too proud to dread any evil that they could not account for. A final caution is very characteristic, "which I know not how to sort," he says, "unless I call it political." "By no means to build too near a great neighbour, which were in truth to be as unfortunately situated on the earth as Mercury is in the heavens, for the most part either in combustion or obscurity under brighter beams than his own."

What we should call considerations of aspect, he treats of as the "placing of the parts," about which he propounds what he calls "a rule of mine own collection," from noting that art was then in truest perfection when it might be reduced to some natural principle. "For what are the most judicious artisans but the mimics of nature"; the deduction from consideration of that master fabric the human frame being that "it plainly appeareth as a maxim drawn from the divine light, 'that the place of every part is to be determined by use.'"

Good so far; what, however, of the special applications wherein guidance most is required? We seem to have a hint of the habits of early rising of our ancestors in the instruction, "Let all the principal chambers of delight, all studies and libraries, be towards the east, for the morning is the friend of the muses." And he gives up the southern aspect, or meridional, to all offices that require heat, as kitchens, stillatories, stoves, rooms for baking, brewing, washing, or the like, as if the heat of the sun was to be directly utilised to saving of fuel, and as if this heat, so valuable elsewhere, would not be an idle aggravation of an inconvenience which the artificial heat employed for the domestic offices produces of necessity. He is more within his right when he relegates pantry, buttery, and granaries to the north, as well as, following Vitruvius, galleries for pictures. Again, he is too reminiscent of the Venice of his long sojourn, when he enjoins that "chambers appointed for gentle motion" (indoor exercise, apparently), as galleries, should be to the north.

If we are to read him strictly here, he would give his building an aspect due east, one of the worst imaginable on English ground, even when the occupants rose at five o'clock winter and summer. With our present habits, which probably give us as many useful hours in the day, the morning sun is delightful to get up by and to breakfast by; but far more important to us is it to have all the winter sun, from rising to setting, in our best rooms, and for our afternoon and evening rooms to command the cheerfulness and delight of the autumnal and even the summer sunsets.

It seems strange that Wotton, writing in the days when the Elizabethan mansions were rising, and when the bay-window was a favourite feature, should have had nothing better to say of the various schemes by which the problems presented to the architect by our climate should be met, especially how advantages of varied prospect might be combined with those of uniform and limited aspect, by bay-windows at fronts or angles; and then as to how our enemy the east wind might be sent past, instead of through, our rooms, and how the chance of south-westerly aspect might best be protected against the drawback of facing prevalent moist and even tempestuous winds.

A criticism is involved in this caution of which we have many opportunities of noting the justness: "When several orders are superposed, the projecting or jutting parts, as they are termed, should be very moderate, especially the cornices of the lower orders. For whilst some think to give them a beautiful and royal aspect by their largeness, they sometimes hinder both the light within, and likewise detract much from the view of the front without, as well appeareth in one of the principal fabrics at Venice, the

palace of the Duke Grimani on the Canal Grande, which by this magnificent error is something disgraced." The propriety of the subordination of inferior entablatures and mouldings may be appreciated by the effect of its disregard in structures nearer at hand than the Grand Canal at Venice. How they can darken what is apt to seem the even over-lighted Grimani palace is not so obviously intelligible. Is it that, as throughout the Regent's Park terraces, the projecting entablatures cut off all prospect from the windows above them of what was so well worth seeing below and in front?

Less successfully, Wotton states five theorems in explicit mathematical form, and concludes, unluckily, that the semicircular is the firmest figure for an arch, little weakened "by an addition of distent" of one-fourteenth part, and so made most graceful.

"As for those arches which our artisans call of the third and fourth point, and the Tuscan writers *di terzo* and *di quarto acuto*, because they always concur in an acute angle, and spring from the division of the diameter into three, four, or more parts at pleasure,—I say such as these, both for the natural imbecility of the sharp angle itself, and likewise for their very uncomeliness, ought to be exiled from judicious eyes and left to their first inventors, the Goths or Lombards, amongst other relics of that barbarous age."

He touches the margin of one problem of much interest,—the due proportion of window to wall-space, though without offering guidance in treating it beyond generalities. Vitruvius, he observes, seems to have been an extreme lover of luminous rooms. "And, indeed, I must confess that a frank light can misbecome no edifice whatsoever,—temples only excepted,—devotion more requiring collected than diffused spirit. Yet, on the other side, we must take heed not to make a house (though for civil use) all eyes, like Argus, which in Northern climes would be too cold, in Southern too hot; and, therefore, the matter indeed importeth more than a merry comparison." That he leans, however, to moderation in window-space, appears by his remark that windows "consisting of so different and unsociable pieces as wood, iron, lead and glass, and those small and weak, were easily shaken,"—considerations which manifestly had great influence with the designers and constructors of his day.

For his observations on smoky rooms, he refers to Philibert, or, as he calls him, Philippe de l'Orme, who certainly speaks much to the purpose. Something, he believed, might be done, in the first instance, by having regard in the distribution of fires in rooms to the direction of prevalent winds; beyond this, "either the wind is too much let in above at the mouth of the shaft, or the smoke stifled below; if none of these, then there is a repulsion of the fume by some higher hill or fabric that shall overtop the chimney, and work the former effect; if likewise not this, then the room which is infested, must be necessarily both little and close, so as the smoke cannot issue by a natural principle, wanting a succession and supply of new air."

Wotton quotes one of his suggested alleviations of "the incommodity of smoke," which is in principle identical with the contrivance of discharging exhaust steam into the smoke funnel, by which Stephenson overcame the difficulty of obtaining sufficient draught to maintain the violent combustion required in his locomotive furnace. A brass ball of good size filled with water, and with one hole for escape of steam, is to be hung above the fire, "whereof the water within being rarified, and by rarifaction resolved into wind, will break out, and so force up the smoke, which otherwise might linger in the tunnel by the way, and oftentimes revert."

The natural hospitality of England is given as a reason for a more spacious and luminous kitchen than he had observed to be usual in Italy; and that it should have likewise "a more competent nearness to the dining-room," is urged rather oddly to avoid the chance, besides other inconveniences, that "perhaps some of the dishes may straggle by the way."

He observes that as regards the Italians,—"There was a kind of conflict between their dwelling and their being. . . . . I observe," he says, "no nation in the world,"—and he knew Germany and France well,—"by nature more private and reserved than the Italian; and, on the other side, in no habitations less privacy." This was a necessary consequence of "so casting their partitions (that is, disposing their apartments), as when all doors are open a man may see through the whole house, which doth necessarily put an intolerable servitude upon all the chambers, save the inmost." Another sentence gives the key to the seeming incongruity by revealing that the reserved Italian nature had another side,—"The direct opposition of such overtures (that is, the setting doors between chambers in series opposite to each other), being, indeed, grounded upon the fond ambition of displaying to a stranger all the furniture at one sight." He does not, however, appear to offer any explanation of the acceptance of this singularly inconvenient arrangement in many great English mansions of his time, which seems so curiously to contradict Bacon's maxim that "homes are built to live in, not to look at."

These excerpts from the first part of the little treatise may be concluded with one more which does credit to the good sense of the Italian architects and the observation of Sir Henry:—

"Touching conducts for the *suillage* (sewage) and other necessities of the houses (which, how base soever in use, yet for health of the inhabitants are as considerable and perhaps more than the rest) I find in our authors this counsel, that art should imitate nature in those ignoble conveyances, and separate them from sight (where there wants a running water) into the most remote and lowest and thickest part of the foundation, with secret vents passing up through the walls like a tunnel to the wild air aloft, which all Italian artisans commend for the discharge of noisome vapours, though elsewhere, to my knowledge, little practised."

Even now, after three hundred years, Sir Henry's countrymen are only incidentally adopting this admirable sanitary precaution.

It were superfluous to extract or to advert to numerous sound precepts which, in substance, are familiar enough if sometimes quaintly expressed, as,—"exact care is required for the foundation, for if that happen to dance it will mar all the mirth in the house,"—till he arrives at the question of the roof, when "the house may now have leave to put on his hat, having hitherto been uncovered itself and consequently unfit to cover others." His second part comprises much pleasant reading, treating of internal and external ornament. The opening sentence (which has for a long time stood as a motto on the title-page to each of our completed volumes) is replete with the spirit that animated the founders of the mansions of the landed gentry under the Tudors and the Stuarts:—

"Every man's proper mansion-house and home being the theatre of his hospitality, the seat of self-fruition, the comfortablest part of his own life, the noblest of his son's inheritance, a kind of private princedom, nay, to the possessors thereof, an epitome of the whole world, may well deserve by these attributes, according to the degree of the master, to be decently and delightfully adorned." Home sympathies these, not the less honourable because paraded ostentatiously by a fool like Master Slender,—"I would I might never come in mine own great chamber again else."

A RESPITE FOR OLD LONDON.

"Where the fair columns of St. Clement stand,
Whose straiten'd bounds encroach upon the Strand;
Where the low pent-house bows the walker's head,
And the rough pavement wounds the yielding tread."
GAY, *Trivia*, iii.

THE Metropolitan Board of Works have resolved to postpone for the present some of their schemes which embody certain improvements in the size and direction of existing London streets. We shall have to wait awhile for the direct thoroughfares from Piccadilly through Soho and St. Giles's to Bloomsbury, from Charing-cross to Oxford-street, and from the Gray's Inn-road (corner of Clerkenwell-road) to the Angel at Islington.* Two of the Board's projects had certainly assumed no definite shape, but these latter are noteworthy quite as much for what their abandonment leaves us longer to enjoy as for what their accomplishment would have performed. We speak of the new approaches to the Royal Courts of Justice, the one from the north along Lincoln's Inn-fields, through the purlieus of Vere-street, Clare Market, and Clement's Inn; the other from the west over the sites of the churches of St. Mary-le-Strand and St. Clement Danes, with the intervening Wych-street and Holywell-street. One of the most interesting prospects in all London is at this day to be seen from the western end of St. Clement Danes Church, a view unsurpassed by Staple Inn, Fetter-lane, or even Cloth Fair. Standing then by the site of that church tower from whose roof a gun was levelled at Essex House hard by, in the attack upon the unfortunate Earl of that title, and facing the west, one sees immediately to the right hand the entrances to Clement's Inn and Danes Inn. In the centre of the picture, at the middle distance, is a quaint old house, now divided into two, occupied by mine host of the Rising Sun and by a bookseller; whilst the narrow openings at its either side severally curve in growing obscurity to what was the Cock and Magpie (or Pye) in Drury-lane over against Craven House (Olympic Theatre), and to the former site of the Maypole, in the Strand, which the Drury-lane farrier, John Clarges, set up to celebrate his daughter Nan's good fortune in becoming a duchess.* Our capital can boast of few such houses as that of which we here speak: though in point of form, if not of age, it has a rival in its Fleet-street neighbour, reputed home of the author of "Poly-olbion," and in one more remote at Norton Folgate. For this house, conspicuous like those for an upper balustrade and antique casements, has listened many and many a year to the chimes at midnight, which Sir John Falstaff recalled to the memory of Master Shallow. Though not co-eval with the worthy knight, it is certainly a contemporary of the windmill at the nether end of Milford-lane, as well as of the Chapel of the Holy Ghost in the Strand, and has witnessed the demolition of Chester Inn, Strand Inn and Bridge, and St. Ursula-le-Strand's Church, for the erection of Somerset Place. A few years later the roadway below, long known as "Without Temple Barr," is crowded with the soldiery who are investing Robert Devereux's mansion in the Outer Temple, the successive names of which are in themselves an epitome of the local history.† This house has seen the whole career, extending over 200 years, at once glorious and ignoble, of Temple Bar, and here remains in survival of the comprehensive alterations made around it seventy years ago. It has been conjectured that the flat roof and balcony afforded a convenient place whence to see the hideous relics impaled upon Temple Bar This, though, can scarcely have been the case, for during the whole time that barbarous custom prevailed, and, indeed, for many years afterwards, there lay between the house and the Bar many structures which must have effectually obstructed the view. These were some buildings against the northern side of St. Clement's Church, the church steeple itself, and the bow of Butcher-row terminating in the parish almshouses and vestry-room.

As a collection of shambles and stalls, Butcher-row dates from the thirteenth century; since licence for a flesh-market here was granted in the 21st Edward I. This character it retained during the period, previously described by Fitz-Stephen (*temp.* Henry II.), when the scholars and City youth would walk forth in summer evenings to take the air, repairing to the sweet, wholesome, and clear Holy Well and St. Clement's Well. The latter is now represented by a conduit-head near the church. The former exists beneath the Unity Tavern which was lately erected in place of the old Spotted Dog in the Strand. The humorous print of the "Beaux's [*sic*] Disaster" contains a good view of the Row: some butchers adjust their differences with an exquisite by hanging him by his skirts on to a meat-hook. Conspicuous among the wooden and plastered structures of King Edward VI.'s days stands a five-storied Jacobean house, bearing on its front roses, crowns, and *fleurs-de-lis*. This was inhabited by the Count Beaumont, French ambassador to King James I., and provided a lodging to the Duc de Sully in 1603, whilst the "palace of Arundel" was preparing for him. Latterly Butcher-row became famous for the Bear and Harrow, returning whence to Duke (now Sardinia)

* See the *Builder*, December 16, 1882; February 17, 1883; and May 26, 1883.

* A narrow passage behind the Olympic Theatre retains the name of Maypole-alley.

† Exeter House (the Bishop's Inn), Paget Place, Norfolk House, Leicester House, and Essex House. The Countess of Nottingham who retained Essex's ring died in Arundel House, hard by. The bell which he brought from Cadiz hangs at Lincoln's Inn.

Street, Nat Lee, overtaken with wine, was suffocated in Clare Market by the snow; for Betty's chop-house and for Clifton's Eating-house, a resort of Goldsmith, Boswell, and Johnson. It was in Butcher-row that Johnson, after worship at St. Clement's, met his fellow-collegian Oliver Edwards, whom he had not seen since they left Pembroke, that "nest of singing birds," fifty years before. He talked of their advancing age, to the Doctor's distaste: "Don't let us discourage one another." Then Edwards, a slow, well-meaning man withal, made the exquisitely naïve remark which so charmed Burke and Sir Joshua:—"You are a philosopher, Dr. Johnson. I have tried too in my time to be a philosopher, but, I don't know how, cheerfulness was always breaking in." At Clifton's, Johnson, ever ready to talk, entered into an argument as to the cause of a negro's complexion with the excitable Irishman who possibly may have just seen the kneeling black figure supporting a dial in the pretty Garden-court of Clement's Inn, the gift to the Society of Hollis, Earl of Clare. The Irishman soon reduced the discussion to a dispute, which his opponent ended with an unwonted forbearance by leaving his seat and walking quietly away. By the south-eastern corner to Butcher-row and Clement's-lane was the wretched tenement where, according to Winter's confession, he, with Catesby, Guy Fawkes, and Wright, administered the oath of secrecy to the conspirators, when all received the sacrament in an adjoining room. The Row, with Ship-yard, Crown-court, Crown-place, &c., and parts of Clement's lane and Inn, was pulled down some seventy-five years ago in carrying out Alderman Pickett's scheme, a project which originally embraced the reconstruction of the church in alignment with the oval open space cleared away about it.

A portion of Clement's-lane remains, by King's College Hospital, which occupies the site of the parochial burying-ground, being that, beyond doubt (for Hawdon, the law writer, died within the parish) to which Joe conducts Lady Dedlock in "Bleak House." The new Law Courts have claimed their place, and within the past few weeks the destruction of Horseshoe-passage, with the fine old house at the Carey-street corner, in its last days a district soup-kitchen, takes away nearly all the old-world aspect of this locality. It is more than doubtful whether at Clement's Inn they will talk of mad Shallow yet, of Skogan,* whose head Falstaff broke at the court-gate when he was not a crack thus high, or of the Staffordshire worthies a quartet of such swinge-bucklers as we have not in all the Inns of Court again. But we may call to mind a ragged little urchin begging his meals in the Inn, and who, befriended by a lawyer's clerk who taught him to earn a few pennies by copying, ultimately raised himself to the Bench as Lord Chief Justice Saunders. In Clement's Inn, too, lived Hollar, known there as "the Frenchman limner," and Sir John Trevor, Master of the Rolls and Speaker, one of the few men who dared to caution his cousin Jeffreys and King James II. against their untoward conduct. The Angel Inn, whence Bishop Hooper was taken to the stake at Gloucester, was pulled down in 1854. The Hall was built in 1715, the device in its front having reference to the mode of the saint's martyrdom in being tied to an anchor and cast into the sea.

Along the southern side of Wych-street, leading to the Via de Aldwich, or Drury-lane, are some rare examples of early seventeenth-century domestic architecture. The side premises of the Rising Sun, the wooden fronts of Nos. 39 and 40, with the elevations both in front and at the rear of Nos. 43, 45—48, form one of the best groups of their kind in the town. The open space on the northern side marks the site of the White Lion, a favourite "flash ken" of Jack Sheppard, and which, with his master Owen Wood's reputed workshop by the entrance was removed just three years ago. The sign of the crescent moon still distinguishes the print-shop (No. 36) in Holywell-street, which house and Nos. 1—3, 14, 31—34, and 38, are worthy of examination. Nevertheless, this once highly characteristic thoroughfare has suffered considerable changes of late; whilst the quaint rampant lion boldly carved in wood,—sole vestige of Lyon's Inn,*—by the corner of the footway from the Strand, as well as the Indian Queen, painted by Catton, R.A., have alike disappeared in recent rebuildings.

* Henry, usually called moral, Skogan, whom Ben Jonson describes as,—

A fine gentleman and master of arts,
Of Henry the Fourth's time, that made disguises
For the King's sons, and writ in ballad royal
Daintily well.

There was also John Skogan, a professional jester, *temp.* Edward IV., who in repute was the Joe Miller of Shakspeare's day. Joe Miller was buried in the graveyard mentioned above.

RAILWAY COMPANIES AND THE LAW OF LIGHT.

The extent of the legal rights of railway companies in regard to the easement of light has recently been seemingly considerably enlarged. In fact, it may be said without exaggeration that the law has been lately changed, and that whilst the rights of railway companies have been enlarged, those of adjoining owners of property have been decreased. One general proposition of law is that the owner of the servient tenement may prevent the accruing of the right to light by obstructing the windows through which the dominant light is gained. To this general rule, however, an exception has hitherto existed, which is thus briefly summarised in Mr. Roscoe's "Digest of the Law of Light," p. 16:—"The possession of land by a railway company does not give it a right to block up adjoining lights so as to prevent the creation of a statutory right." To this is appended a note to the following effect:—"This was distinctly declared to be the law by Malins, V.-C., in Norton *v.* The London and North-Western Railway Company, but the case in the Court of Appeal was decided upon other grounds." The writer then proceeds to discuss shortly the principle upon which the Vice-Chancellor acted. In the current number, however, of the "Law Reports," there will be found a case,—namely, that of Bonner *v.* The Great Western Railway (L. R. 24, Chancery Division, 1),—which, on the whole, may be considered as directly opposed to the North-Western case. We say on the whole opposed to the previous decision, because it was approved by Vice-Chancellor Bacon, but directly disapproved by Lord Justice Baggallay in the Court of Appeal. But the two other Lords Justices considered that the motion could be refused without going into the more difficult question. It may here, however, be stated that the railway company had obstructed the plaintiff's light, and it was admitted that he had only enjoyed it for sixteen years. This was the very concise judgment of Lord Justice Lindley: "The plaintiff comes here asking an injunction to restrain the defendants from interfering with certain lights which he admits he has no title to. That appears to me to be the simple answer to the case quite apart from anything else"; and Lord Justice Fry considered that as the taking down of the obstruction might seriously interfere with the company's rights, it should be left up, and the more elaborate questions argued at a future period. But it seems to be obvious that if these two Lords Justices had considered that a railway company had no right to block up a light before it had become a prescriptive one, then that they would not have allowed it to do so, even for a time. But, guarding themselves as they did, it cannot be said that they directly overruled Vice-Chancellor Malins, though it is obvious that the inclination of their minds was to consider that he had, in Norton's case, given a wrong judgment. When, however, we turn to the judgment of Lord Justice Baggallay, who was the senior and so presiding judge, we find him much more out-spoken. For after considering the cases which bear upon the main point, he says that they "go very strongly to the effect of showing that the provisions of such Acts [*i.e.*, Private Railway Acts] are not to interfere with the ordinary rights which proprietors otherwise would have." Of course, if railway proprietors are to have exactly the same rights as any other proprietors of land, it follows that they can block up adjoining lights so as to prevent them from becoming indefeasible rights. Then further on, after saying that Norton *v.* The London and North Western Railway Company was decided on a collateral point, which no doubt is true so far as the judgment of the Court of Appeal goes, but which does not dispose of Vice-Chancellor Malins's elaborate judgment, he proceeds, "*Primâ facie*, a railway company have a right to use their land as they think fit, provided they are not using it for purposes inconsistent with their Act of Parliament." This dictum again produces the necessary consequence that the company have the right to obstruct windows on adjoining land so as to prevent the creation of an indefeasible right to the advantage of the owner of the dominant tenement. Without going into a lengthy discussion of the opposing principles on which these judicial views are based, it is sufficient to point out that Vice-Chancellor Malins stated that in his view the object of the Legislature in allowing a railway company to take possession of land was to enable them to have a right of way across the land with the necessary conveniences for the traffic of the line. In fact, railway companies are, if this view be correct, owners of land for special purposes, and with limited powers only; according to the opposite view their functions may be limited, but their powers are as unfettered as those of an ordinary landowner. Having regard to the judgment of the Court of Appeal, to the fact that railway companies may find it necessary to raise buildings on various parts of their line for stations or other purposes, it may probably be considered that the more recent judicial view is sounder in law than that of the late Vice-Chancellor Malins. It cannot, however, but be unsatisfactory that this important question should be left in the slightest doubt, affecting as it does valuable rights, especially in large towns.

* Now site of the Opera Comique Theatre. Some of the inn vaults and an archway exist beneath the stage of the adjacent Globe Theatre.

PHASES OF LONDON LIFE:

SURPLUS AND BADLY-PAID LABOUR.

Whatever tends to illness, indigence, and pauperism must be an evil as well as a misfortune, and as surplus labour in our large cities, particularly in London, spells want of employment, many thousands must feel the pinch of poverty. There is no gainsaying the fact that the badly-housed, poorly-fed, and thinly-clothed, are prone to attacks of illness or disease, and no family, the breadwinners of which are long unemployed (and who when working are solely dependent on what they earn), can maintain the normal conditions of healthy life and living. The causes of surplus and badly-paid labour are sundry, though they may be reduced to a few main causes. Some years ago surplus labour was only common to a few trades and occupations, but of late years it has become general in regard to a large number of industries. There have been always in London and other cities some sources of employment which merely lasted for a season, and then came dulness in trade, and the discharge of a number of "hands." In a variety of other trades there was more or less briskness all the year round. With the advent of the railway system and the gradual but steady increase of machinery, a great change began to set in all over the country, a change which in its result has affected the London labour market more than any other place in the three kingdoms, or, indeed, in Europe. It is only within the last quarter of a century that men of intelligence have begun to fully realise the changes that are rapidly taking place, having for their effect the entire revolution of the labour market in this country. Capital, or rather capitalists, have in every direction utilised machinery, and, as a consequence of its application, labour in numerous fields of industry has been not only organised into chief branches, but minutely subdivided into several. This system, as we have remarked on more than one occasion, has created of late years a very large army of part or sectional workmen, and, of course, has led to the decline and great reduction of the general workman. When trade is brisk a large number of hands are employed, but as machine labour, from its great ramifications, has a tendency to glut the market with goods, periods of dulness and want of employment are inevitable. Cheap railway communication with London for several years past has had the obvious effect of continually throwing into the City thousands of workers of nearly all occupations, some skilled and others unskilled, with large contingents of young clerks, who, in common with many other youths, foolishly imagine that it is only necessary to come to London to find what they seek,—suitable and remunerative employment. Forty years ago and less the parents of many young men in the provincial towns were content to see their sons settling down to employment in their native place or going to other towns in their respective counties. The young men

themselves of that period had not such a burning desire to get up to London as the country youths of the present day have. Old and young men often, when their sources of employment fail in their native districts, turn their faces towards the big city, unconscious of what they will have in too many cases to endure after their arrival. Great and wealthy as London undoubtedly is, and large as is the number of charitable and philanthropic institutions in her midst, yet it is unfortunately too true that London may be a positive desert to the stranger arriving in it without means or friends who may know him. Although skilled artisans have a far better chance when coming into London from the country to obtain employment in some trades, yet the fact should be known that there is a very large amount of surplus labour even amongst the skilled trades in London. Building operations have been for many years more or less brisk in the metropolis, and particularly in the suburban districts; but notwithstanding the large amount of speculative building that is or has been lately going on in the suburbs there is a large surplus of labour in our midst connected with the building trades. Between speculative building of the better class and the low class, or what is termed "jerry" building, of course there is a great difference. The latter kind of building still absorbs a considerable amount of labour, but not of the skilled or respectable kind, though, unfortunately, some skilled artisans, for want of employment with the regular builders, are obliged to work for the scamping fraternity, and accordingly have to scamp to order. The jerry tribe mostly employ raw youth, with little experience, and an odd old workman at reduced wages, who has been unfortunate, or who is not acceptable for other reasons in the regular shops. It may be taken for granted that the majority of the young hands that have been in the habit of working for years with the low class of builders, have contracted habits and modes of working that entirely unfit them for employment in respectable workshops. These men are certainly of a class that adds to the surplus labour of London, and when the dull time comes they are reduced to poverty.

There is a great surplus, as we have said, of skilled as well as unskilled labour always in London, but a portion of it gets betimes absorbed by the workmen being obliged to work at lower wages. A glut of goods produces cheapness, and a glut of labour, skilled or unskilled, naturally leads to a reduction of wages; for thousands of workmen with wives and families to support will prefer the half loaf to no bread, or, in other words, lower wages to no employment at all.

It is difficult to see how the large amount of surplus labour that exists in London at present, and which we fear will continue to exist for a long time to come, can be profitably absorbed; that is, with advantage to the employers and the employed. Labour of a certain kind may have fresh channels opened to it by degrees, but for the surplus labour belonging to a great variety of branches there must eventually be a migratory or emigratory movement, in the absence of State intervention on behalf of the unemployed at home. We do not intend at present to enter into a discussion of systems of migration or emigration, or even of State intervention on behalf only of the surplus labour of London. In the development of the national resources of course many thousands of hands of a certain class or classes could be employed if the State willed it, but such employment would have little appreciable effect in thinning the ranks of the unemployed in London.

It is nearly a century since the question was started,—Can a capital become too large for the country?—or, in other words, is London becoming too large as the capital of England? Some nervous folk, as far back as the time of Elizabeth, thought London was growing too fast, and even ordinances and proclamations were issued forbidding the building of houses without authority. The statesmen and citizens of 1800 (or later) had not the remotest conception that London would increase to the extent it has done since the end of the first quarter of this century. If ever the question could be asked in sober seriousness, as to whether a capital of such gigantic dimensions as London is an unmixed good to the country and the common weal, that question might be asked now, so that all its bearings might be dispassionately discussed with the view to the future of labour and London life and living.

We cannot roll back the clouds of a hundred years gone by, any more than we can unmake London, and give her the appearance she had a century ago, or even fifty years since. If it were even possible to do so, it would not be advisable, although we may be thoroughly conscious of the evils that have grown with the growth of our somewhat unwieldy capital. If we cannot, however, radically alter the outcome of the past, it is in our power certainly to shape and mould matters to some extent in regard to the future of London. It is not, we think, advisable to encourage a migration to London of persons of any class from the country towns and centres of industry. The great influx to London from the country districts can hardly tend to the welfare of the nation permanently; but despite what may be written, men and women will rush indiscriminately to London, as young men will into clerkships, finding too soon, to their sorrow, the struggle for life in this big city is often a very hard and prolonged struggle indeed. It is in the power of many parents, if they are wise, to serve their sons' best interests, and perceptibly reduce the surplus labour in one branch in London. Let not so many parents indulge the ambition to make their sons mere clerks, with the belief that it is a "genteel" or respectable employment. Gentility is very good in its way, but starvation wages, owing to surplus labour, or the supply being greater than the demand, is a sad result of a "genteel" employment. Better by far that thousands of our clerks became skilled artisans, or took to other employments, instead of clerkships. More young men of the clerkship class rush to London yearly with the hope of obtaining good appointments, than young men of the artisan class in search of employment.

We know the case of London and its surplus labour is in many respects exceptional, and why it is so we have given some reasons that ought to receive serious consideration on the part of parents and guardians. It would be a wise resolve on the part of our statesmen also to give their early attention to the question of the expansion of London, and its important bearings in respect to life and living therein in the future.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE second ordinary general meeting for Session 1883-84 of the Royal Institute of British Architects was held last Monday evening, at No. 9, Conduit-street, Regent-street, Mr. Ewan Christian, Vice-president, being in the chair.

Mr. E. C. Robins, F.S.A. (Fellow), read a paper entitled "The Fittings of Buildings for Applied Science Instruction." He commenced by remarking that he looked upon the present paper as supplementary to that read by him last session on the buildings themselves,* but by no means secondary in importance. In an economic view of the question it was necessary that the architect should possess from the very outset a clear perception of the structural provisions involved in the adoption of any particular system of permanent fittings. There was a work of research to be done by the science professors before the constructive faculties of the architect could be properly brought into play; and, moreover, a sound economy demanded that the very best method of doing anything from the very beginning should be the rule of those who desired the best results at the least expense. The paper was not intended to include any description of movable apparatus which did not immediately concern the architect, except so far as the position of necessary articles of furniture in a house always affected its planning: thus the position of steam, gas, electric, and other machines, shafting, &c., must be pre-arranged. The paper was intended to take the professor's place and to be an *aide mémoire* to the architect for some of the chief permanent fittings required in chemical, physical, and mechanical laboratories, but more especially chemical.

Mr. Robins then proceeded to describe the more important fittings of physical laboratories, as illustrated by those of the Technical College of Japan and the Finsbury College, both of which were designed by Professor Ayrton.† The solid tables and working-benches chiefly required in these laboratories were illustrated; also the glazed inclosures to the same, where the operator stands on a floor in no way connected with that which forms the foundation of the table at which he works, and which he can close and lock up in his absence. In respect to chemical laboratories, he, chiefly with the assistance of Dr. Armstrong, had prepared an elaborate comparative analysis of the fittings of some two dozen chemical laboratories at home and abroad, which were taken in the following order:—1. The working-benches and their fittings, illustrated by a comparative table of the different laboratories and a series of large drawings. These fittings were described under the following heads:—(*a*) Dimensions and distance apart of benches and students; (*b*) Drawers and cupboards, their shelves and locks; (*c*) Materials used in their construction; (*d*) Upper works, re-agent shelves, &c. 2. Draught closets for general use:—(*a*) Their position in the laboratories; (*b*) Their dimensions, area, and height; (*c*) The arrangement of the closing sashes; (*d*) The material used in their construction; (*e*) The extraction flues provided; (*f*) Dr. Armstrong's hood arrangement. 3. Draught closets for special purposes:—(*a*) Sulphuretted hydrogen closets; (*b*) Evaporation closets. 4. Demonstration table and fittings. 5. Lecture-room fittings:—(*a*) Lecture-table; (*b*) Draught closet; (*c*) Other lecture-room fittings. 6. Preparation-room fittings. 7. Store-room fittings. 8. Class-room fittings. 9. Balance-room and library fittings. 10. Assistants' room. 11. Fittings for rooms for various special purposes:—(*a*) Gas analysis room; (*b*) Spectroscope and polariscope room; (*c*) Photometric-room; (*d*) Combustion-room; (*e*) Explosion-room. 12. Metallurgical laboratory. 13. Special operations-room.

Under each of the above heads Mr. Robins gave an exhaustive description of the reasons for and against the various representative examples, which he illustrated with numerous large diagrams drawn to a scale of a quarter full size.* The paper concluded with remarks on the fittings required for mechanical laboratories, with illustrations, the result of consultation with Professor Perry and others, these fittings being described under the following heads:—1. Lecture-room fittings; 2. Laboratory fittings; 3. Engine-room; 4. Workshops; 5. Melting-room and smithy; 6. Drawing-office; 7. Museum; 8. Testing-room.

In an appendix to the paper, which time, he said, would not permit him to read, would appear detailed descriptions of the systems of heating and ventilation appropriate to science laboratories, exemplified by those adopted at the following Institutions, viz., Finsbury College, Central Institution, Yorkshire College, Merchant Venturers' School, University College, Dundee, and the Institution of Civil Engineers. In compiling the tables Mr. Robins said that he was indebted to the professors and architects of the many buildings referred to for the information given, and though some of the tables were not yet complete, they would be made so before the paper was published in the "Transactions."

In the discussion which followed,

Sir Frederick Bramwell, in response to a call, said that the only part he was at all competent to speak about in the paper he had found relegated to the appendix, but there was one matter to which he would like to call attention, viz., the necessity in the working benches for the students that they should have space for their toes.

Mr. Alfred Waterhouse, in proposing a vote of thanks to Mr. Robins for the address, said he felt sure that they were all extremely grateful to him for the way he had brought this subject forward, and for the valuable information he had given them. In the course of the paper his (the speaker's) name had been once or twice mentioned, but he must say that he had not designed any of the fittings referred to, he merely following the explicit directions given to him in respect of those buildings of which he was the architect. In these laboratories they found that even the professors differed as to details, therefore it was necessary that architects should know whom they were to serve before they began their work. Mr. Robins's paper would become extremely useful

* See *Builder*, vol. xliv., p. 171.

† For plans, section, and description of the Technical College of Japan, see *Builder*, vol. xxxviii., pp. 449, 476-7, 484.

* The illustrations comprised the Technical College, Finsbury; Owens College, Manchester; Manchester Grammar School; University College, Dundee; Merchant Venturers' Society's School, Bristol; and also of chemical laboratories at Berlin, Pesth, Munich, Chemnitz, Bonn, and Leipsic.

to them in the future in this respect, enabling them to arrive with some certainty as to what was expected, without the assistance of professors. One important matter was not alluded to, viz., the question of light, it being very necessary that proper arrangements should be made so that students did not stand in their own light. He thought, in regard to working benches for the students, that at the Manchester Grammar School a small recess was provided for the toes of the students as they stood at their work.

Professor Carey Foster urged that arrangements should be made in the fittings of buildings for applied science instruction so as to secure perfect steadiness and freedom from vibration.

Dr. Thorpe, of the Yorkshire College, Leeds, bore testimony to the complete manner in which Mr. Robins had treated his subject, and he only regretted that it had not been read before the members eighteen months ago, as it would have guided many of them in the fitting-up of various schools. He quite agreed with the last speaker as to the necessity of securing perfect steadiness and freedom from vibration in laboratories. In Queen's College, Belfast, great attention had been paid to this matter, so that the experimenter, walking over the floor, only gave the smallest possible tremour to the apparatus. With respect to the character of the wood of which the table-tops should be made, this was an interesting matter to chemists. There was nothing more annoying or unsightly to see than wood charred or split. Dr. Roscoe some years ago, when he was thinking of the plans for Owens College, Manchester, made a number of experiments, and, in the result, he found that the greenheart wood stood the best test. With regard to the question of sinks, they found at the Yorkshire College that a very much less sink accommodation than was usually provided sufficed. In most large towns the water pressure was, of course, very high, and in some laboratories care was taken to reduce the water pressure. High-pressure had its advantages, but it had this disadvantage, that it was almost impossible, in using the taps, to prevent a great amount of water being spilled, which looked more or less unsightly. This difficulty was got over in a very ingenious manner at Munich, where the sides of sinks, instead of being made perfectly rectangular, were made oblique, so as to prevent splashing. A great deal had been said about the use of sulphuretted hydrogen closets, and it was certainly desirable to keep the atmosphere as sweet as possible in order that students might work longer.

Mr. Slater expressed his great gratification that this subject had been brought before the Institute, for the study of physical science was more and more becoming a necessary part of our every-day life. In a large number of manufacturing industries it had been deemed absolutely essential to obtain proper technical assistance in experiments which have been found desirable to make. As to the question of vibration in connexion with the electric light this would assume considerable importance in respect of the number of lighting stations at which electricity was generated. He had much pleasure in seconding the vote of thanks to the author of the paper.

Professor Armstrong said that the paper was one of great importance because, at the present time, there was a great deal of physical and chemical research going on. The examples of laboratories referred to were of the highest class, but at small schools all these elaborate details were not required. He urged the necessity of proper ventilation of the rooms, the difference between a well and an ill-ventilated place having a very important influence on the work which was done. Then as to lighting the rooms, it was necessary to have as few burners as possible, while the gas supply should be properly regulated. He looked upon the ordinary sunlight as one of the most wasteful forms of burner possible.

Professor T. Roger Smith moved that the appendix to the paper should be read at the next meeting, as the subject was one of the most important of the present day.

Mr. Brooks seconded the motion, which was carried by acclamation.

The appendix to the paper, with the adjourned discussion, will be the business, therefore, of the next meeting, which will be held on the 3rd proximo.

A DILAPIDATED TOWN.

If we merely judged from outward appearances, the last place in the verdant and fertile Midlands where the invalid sufferer should look alike for health and beauty, would be the low-lying, tumble-down, steamy borough of Droitwich. Its appearance is familiar to those journeying from the old western emporium of Bristol to the Midland metropolis, as well as to travellers from Classic Oxford to the smoky, fiery district around Wolverhampton, which has been too appropriately named the "Black Country." In the midst of furnaces, factories, chimneys, and forges we expect to find dingy towns and an atmosphere the reverse of clear; but not in the midst of the orchards, gardens, and fertile fields of the pear-lands of Worcestershire, the county of the horticulturist, the botanist, and the geologist, where the inviting slopes of the Malverns fade from the eye only to be replaced by the wood-crowned steeps of Woodbury, Abberley, and the breezy uplands of Bromsgrove Lickey. But between these, and a few minutes after leaving the towers of Worcester, the traveller finds himself at the historic and once famous borough of Droitwich. Instead of pleasant and picturesque homesteads, or the clean streets of an average country town, there is a dingy collection of stunted chimneys, a steamy, smoky atmosphere, bespeaking a woe-begone locality, a decaying community which repels rather than invites the visitor. Yet it is the centre of a great industry. Out of "the bowels of the harmless earth" flows a continuous stream of the strongest brine in Europe. The very atmosphere has a saline taste, for it is misty with the steam arising from the pans where the brine is being turned into salt for our trades,—salt to preserve our food, salt for the antipodean cattle-dealers to preserve their hides; bay-salt, fine salt, coarse salt, of all varieties and shapes. From time immemorial the salt springs at Wyche have been famed. The Romans did not overlook them. The Saxons used them. The former gave the place the distinctive name of Salinæ, and the latter called it the Wyche, and the roadways which led from it, east, west, north, and south, "the salt ways." When the Normans came, the Conqueror claimed certain rights and dues here, and from these "droits" it received its present and distinctive name. A score of years have not gone by since the occasional visitor left it with a shudder. No one went to it willingly save on business, but now it is visited by hundreds. It has become the Bethesda of the pain-stricken, the gout and rheumatic afflicted, who find in the use of the brine-baths relief from their sufferings.

Droitwich has other attractions for the architect, the archæologist, and the historian. Behind the decrepit-looking houses in the principal street are the remains of the mansions of the old salters and of the neighbouring squires, who acted as Lords of the Droits, and sat in the old Exchequer Chamber when the Tudors were the reigning sovereigns of the realm. No visitor now passes at once into the picturesque Friar-street. He is taken by the new Church of St. Nicholas to the old manor-house, which the "Salt King," as Mr. John Corbett, the Parliamentary representative of the borough is sometimes called, has transformed into a cosy and comfortable hotel. All the old timber framing has been preserved, and the additions have been carried out in the same spirit and style as the original. The Salters' Hall opposite, designed by Mr. John Cotton, is also timber framed, for Droitwich was situated in the forest of Feckenham, and timber-framed houses were common in the part. If this was not the case there would have been but little of old Droitwich left, for the perpetual pumping of the brine since it was found beneath the bed of gypsum, as well as in the springs that bubbled up through it, has caused the earth to sink and the brick-built houses to lean and crumble by the side of their oak-framed neighbours, until the safety of the inhabitants has demanded their removal. It is this that gives the place such a dilapidated appearance, and has caused so much of its former architectural beauty to be hidden by brick screens and coverings of plaster. It is this that causes the Church of Dodderhill, which overlooks the town, to hang over like the leaning tower of Pisa. There are many quaint specimens of domestic architecture in Friar-street. In more than one instance, fine moulded solid oak beams, of fifteenth-century date, are used to frame the gateways to salt-yards. The panelling of some of the other houses is picturesque, and the brickwork varied, the gables and bay windows diversified in a manner that would be a lesson to many a student in the Queen Anne style of domestic architecture. The chimney-stacks, like so many in Worcestershire, are remarkable for their excellent but simple ornamentation and variation of outline. It would seem as if the old priory had afforded materials for some of these details, and suggested the mullions and tracery observable in one of the houses close to the junction with High-street. Elsewhere remains of ancient decorative work are found imbedded in houses now turned to far other uses than their original builders contemplated. In the High-street, for instance, a swinging sign-board announces the Crown Inn. It is but a brick front washed with colour. It has a low front with two gables to receive the dormer windows; a more uninviting edifice to the antiquary could scarcely be conceived. A glance at the passage which leads to bar and parlour is hardly more attractive. The thick whitewash, if it has not entirely hidden the massive beams and heavy stone foundations, has almost obliterated the handiwork of the Mediæval carver and architect. The front beam is enriched with flowers and mouldings of an ornate character, and is carried behind the mean brick front the whole length of the building. The jambs, too, are moulded, and the old front can, as the details are made out, be reproduced. The front apartment was a long, low room with the ceiling divided by moulded beams into compartments. The windows were large and wide, and the room occupied one side of a small quadrangular court. The hall, or dining-room, was on the first floor. It yet exists in all its stately proportions, though it is divided by partitions and its open-timbered roof is hidden by a low ceiling. Its noble embattled fire-place has many escutcheons in its defaced tracery, but the armorial bearings are gone. The other portions of this old mansion are defaced and turned to ignoble uses. There is sufficient left to make out the general plan of a fifteenth-century house of the best class, and one which was occupied by one of the chief inhabitants, but which of the families whose names are entered in the Corporation books or enrolled in the Heralds' College, it is difficult to determine. The fine mouldings of many of the other houses remaining in the High-street attest the wealth of the owners. We know that the re-edification of the town was in progress when Leland visited it in the early part of the sixteenth century. He speaks of seeing "a fayre new tymbre house, longinge to Mr. Newport, on the right hand." This house is now incorporated with the Brine baths, and was for many years the only hotel (the George) in Droitwich. The bridge over the Salwarp river, on which there formerly stood a chapel, has yet the ancient piers, but its form was altered when the waters of the Salwarp were utilised to feed the canal (one of Brindley's famous works) which connects Droitwich with the Severn. There is an old timber house close by with a ponderous stone chimney-back, which dates from the Tudor period. The Exchequer-house stood close by, and the remains of its fine stained-glass windows, bearing the arms of the bailiffs in the Elizabethan age, is preserved at the Raven Hotel. The exigencies of commerce, and the canal, wharfs, and railway cuttings have destroyed the riverside antiquities and exposed the fine Roman tesselated pavement of the old salt-workers, which has been removed to Worcester Museum for safety.

The ecclesiologist and the architectural student naturally would inquire after the churches. Of these there were many, and three yet remain, each worthy of attention, and two of them unrestored. The "meane church in the chiefe street," which is situated at the angle of High-street, opposite the present market-house, yet remains. It has the same dilapidated, forlorn look as the rest of the town. The tower at the north-eastern corner is out of repair, and the two great western windows are the plainest and most uninteresting specimens of the Churchwarden style, almost forbidding in their ugliness. The entrance fronting High-street, though dilapidated, also has much beauty of detail and graceful proportion. It was evidently built at the time the choir of Worcester Cathedral was proceeding, for it has much of the chaste character of the Early English details of that building.

The most conspicuous church, that with the

leaning tower, is St. Augustine's, Dodderhill. It is supposed to have been connected with the Austin Friars, but now it consists only of the choir and transepts of the original church, the nave having been destroyed during the Civil Wars, though the western gable long remained to mark the extremity of the old edifice. The exterior of this fine edifice has little to command attention, but the interior shows a stateliness which makes the church lover regret the stinted proportions caused by the devastation and neglect of the past. The Early English character of the piers and arcading is later than the more elegant work at St. Andrews, and as it belonged to the prior and convent at Worcester, the same architects who designed the arcades of the eastern transepts at the cathedral were probably employed, during the incumbency of Thomas de Cantilupe, afterwards Bishop of Hereford (*circa* 1275).

The church of Dodderhill is not within the precincts of Droitwich in reality. It has had but a tittle of the care and attention bestowed on the older church of St. Peter, which, with the now destroyed church of St Mary, Witton, is supposed to represent the mother church of Droitwich. There are considerable remains of Norman work in this church. The nave was rebuilt in the reign of John, and provision made in the south wall for an aisle by piers and arches being built into it. Nearly a century afterwards a south transept was added. The church was entirely remodelled during the Decorated period, and the tower partly rebuilt and a west window added in the reign of Henry VII. It was "restored" in 1853 by Hardwick. It lies somewhat out of Droitwich, and is chiefly remarkable as having had attached to it the chapel on the bridge, where the pulpit and reading-desk were on one side of the road and the accommodation for the congregation on the other. This chapel was taken down in 1763, and the new one erected near the bridge was in ruins a few years afterwards. It has now gone.

Around Droitwich there are some finely-timbered houses. Westwood, the seat of the Packingtons, adjoins the borough. The church of Hampton Lovett contains the monument of the Packington who was the favourite of Queen Elizabeth, and the prototype of Sir Roger de Coverley. Intrinsically interesting as Droitwich is, notwithstanding its repulsive appearance, it is surpassed by its setting, and amongst the objects of interest to the architect, Impney Court, the seat of Mr. John Corbett, M.P., must not be forgotten. It is one of the few English country houses that was designed by a French architect. It is new, though built where the Corbetts of old ruled four centuries ago.

MODERN CARLSRUHE.

CARLSRUHE, the capital of the grand-duchy of Baden, has developed a degree of building activity which has not been attained by any of the principal cities of South Germany. Those who have not seen the town for the last fifteen years will scarcely know it again. The small houses of the main streets have not only been replaced by splendid new buildings, but new streets have been formed, and entirely new quarters now cover what were formerly gardens and fields. A fashionable West-end of elegant houses has been constructed in the so-called villa quarter, west of the Mühlburger Thor, opposite the Bismarckstrasse. It consists partly of mansions in a good German and Italian Renaissance style. Although the architecture is not everywhere perfect, the impression of the whole quarter is very grand. But it is to be regretted that the buildings are too much crowded; there ought to have been more room left for gardens, and more space between the buildings.

Carlsruhe has hitherto enjoyed the reputation of being the healthiest large city in Germany; its rate of mortality, as statistics prove, is the lowest for the German Empire, very rarely over 18 per thousand. It is now one of the best built and most beautiful towns. The fact that Carlsruhe has "no history," that it has been in existence a little over 150 years, is rather in its favour from a practical point of view. Situated in a wide plain, on the border of extensive forests, equi-distant from the mountains (the Black Forest) and the Rhine, it is scarcely exceeded by any other city of the plain for good and pure air. To all these advantages it should be added that there was no need to confine it in its extension. It was easy, therefore, to provide large squares and wide streets, planted with trees. At the present time, many houses in the centre of the city have extensive gardens and spacious courtyards. In the new buildings all the modern conveniences and sanitary arrangements have been attended to, and it is nowhere easier to live in new houses than in Carlsruhe. At the same time, rents for medium-sized residences are not higher than in small towns, and for large houses even lower, in proportion. The consequence of all those advantages has been that an increasing number of families in a position to choose their place of abode have come to permanently reside there.

With regard to material and intellectual wants and enjoyments, Carlsruhe answers all requirements which may reasonably be made even upon cities of larger dimensions. The city offers every requisite for domestic use and the refinements of life in an unusual degree. There is no scarcity of shops and stores, where the most simple wants and the most fastidious tastes may be satisfied. Some articles of food are even cheaper than in small towns, the country surrounding Carlsruhe, far into the mountains, supplying everything in the shape of fruit, vegetables, and other agricultural produce. All the trades are most amply represented, — art and art industry especially so. Carlsruhe has been long known as a home of art. An academy of painting, in which Lessing was active for some time, and whence have proceeded many eminent painters, is largely patronised. An art-trades school is rising rapidly. In the picture-gallery, located in the Kunsthalle, a building in the modern Romanesque style, may be seen many masterpieces of native and foreign artists. The building also contains casts and Roman antiquities, as well as an ethnographical collection. A large natural history cabinet is housed in the castle. A carefully nurtured art-union helps to disseminate the latest works of painters. The grand-ducal court theatre is one of the most generously supported playhouses of Germany, and possesses, notwithstanding recent heavy losses, well-known actors and actresses of the first rank, as well as an excellent orchestra. Music is much cultivated in the city. Concerts for the general public are held in a large hall built for the purpose, or in the "Stadtgarten" adjoining it, which is a large park and zoological gardens combined. Speaking of gardens and grounds, the Berckholtz Gardens should be mentioned; but the best of the kind is the Schlossgarten, from which the Hardtwald, an adjoining forest, may be reached.

The founder of Carlsruhe, Margrave Charles William of Baden, has been found fault with for not locating his residence either close to the Rhine or in the mountains near Durlach, but about halfway between the two. It will be remembered that the town is indebted for its origin to some differences between the Margrave and the people of Durlach. In 1715 that prince began to erect the town, which spreads out in all directions like a fan round his hunting castle, the latter soon giving place to the present grand-ducal palace. However, thousands of people will have been very thankful to the founder this year, for instance, during the heavy inundations in the spring, for not building his town on the banks of the Rhine. As regards the distance from the mountains, railways and steam tramways have annihilated it, and the Black Forest may be reached as quickly as the Rhine. A ten minutes' ride brings us to Maxau, on that river, where there are an excellent bathing establishment and beautiful promenades. Durlach, on the other hand, is reached in the same time, and in twenty minutes more the town of Ettlingen, two points of the Black Forest whence delightful excursions may be made. It is the intention to connect Carlsruhe by a canal with the Rhine, which will be of the greatest importance for industrial purposes.

Pulpit, St. Mary's Church, Waterloo, Liverpool.—A richly-carved pulpit has been erected in the above church. It is of Caen stone, with crocketted and moulded gables to body, supported by red Devonshire marble columns, with carved caps. The base of pulpit is octagonal on plan, with a string-course of carving in bold relief introduced into the moulding supporting body. The work was supplied by Messrs. Jones & Willis, of Birmingham and London, under the direction of Messrs. Habershon & Fawckner, architects.

THE FIRST AVENUE HOTEL, HIGH HOLBORN.

THIS extensive block of buildings, of which a private view was given on Thursday evening last (the 22nd), and which will be opened for business on Monday next, occupies considerably more than the whole of the site of the late "Duke's Theatre," formerly known as the "Holborn," erected for Mr. Sefton Parry, and opened on the 6th of October, 1866. The Holborn Theatre was built on the site of the old Post-office stable-yard, the buildings forming the stables and coachhouses of the old mail-carts having been pulled down about five years previously. The theatre, subsequently called the "Duke's," and which occupied an area of 15,000 ft., was destroyed by fire on Sunday morning, July 4th, 1880, and this area, for the purposes of the new hotel, being found inadequate, additional sites were obtained in Brownlow-street, consisting of the old Kent Tavern and the pit-entrance to the Duke's, and four shops and houses adjoining, together with the sites of the Crown Hotel and seven houses and shops fronting High Holborn, extending (with the exception of one row of buildings on the west side of Warwick-court) from Brownlow-street to that thoroughfare, and consisting of a total area of nearly one acre.*

This area having been cleared, the new building was commenced in the early part of the year 1882, so that it has been erected and completed in the short space of barely two years.

The front elevation is in the modern Renaissance style of architecture. The whole of the front is faced with Portland stone, the entrance archway corresponding in effect with the elevation, and decorated with red polished Aberdeen granite pilasters and plinths. Through this archway the ground-floor is approached by an entrance-hall, decorated with marble dado and mosaic pavement. On the left are the general manager's (Mr. W. T. Holland), secretary's, and cashier's offices. Beyond the entrance-hall is a vestibule similarly treated, with marble dado and mahogany fittings, &c. This forms the centre of the various postal, telegraphic, and booking offices. The vestibule leads to a commodious reception-room and drawing-room, and to the grand *salle à manger*, capable of accommodating between 300 and 400 persons at the separate tables, being about 90 ft. long by 40 ft. wide, divided by a double row of columns, the centre ceiling being again divided into three bays, the easternmost being filled in or lighted with stained glass, the west side of the room being lighted by stained-glass windows to Brownlow-street. There is a secondary *salon* or dining-hall, decorated similarly to the grand *salon*, the marble dado being by Messrs. Burke & Co. (who have done all the excellent marble and mosaic work throughout). The painted decorations of these rooms, entrance-hall, and vestibule are by Messrs. Campbell & Smith, of 75, Newman-street, and are effective on account of their large proportions. The marble and mural decorations are again relieved by Venetian mirrors and gold decoration. In the daytime they are lighted by the stained-glass windows, and at night by twelve electroliers, by Messrs. Verity. We may here say that the whole of the building throughout will be lighted by the electric light, and in case of the electric light temporarily failing, gas has been laid on throughout by Messrs. Hulett & Co., who have also supplied the gas brackets, electric brackets, and lamps in front of the hotel. Beyond the grand *salon* are various offices, china-closets, &c., and a separate staircase at the north-east angle of the building. To the right of the vestibule are the library and reading-room, the walls of which are decorated with painted tapestry, supplied by Messrs. Maple & Co.; the panels thus filled, together with the stained glass and mirrors, present an effective appearance. There are also additional dining-rooms and a large buffet, but the very spacious grill-room is the chief attraction on the eastern side of the hotel. The grill is by Messrs. Benham & Co., who have also executed the whole of the hot-water, cooking, and heating apparatus throughout. The grill is encased in faïence ware by Messrs. Wilcocke & Co., of Burmantofts, near Leeds, and present a most attractive appearance. The walls of the grill room and buffet are also covered with Burmantofts faïence by the same firm, and have walnut skirtings and dados.

* Dryden is believed to have resided at No. 45, High Holborn, one of the houses now demolished.

The basement and upper floors are reached by the grand staircase and two large passenger-lifts. There are also nine service-lifts, and one for cellars. There is also a third staircase to lavatories and large smoking-room (in basement) for grill-room and buffet, as well as the one at the north-east angle as before stated; thus the building can be used both as an hotel and as a restaurant, ample accommodation being provided for both purposes. Facilities are provided also for entrance to the hotel from Bedford-row. Near the grand staircase are cloak-rooms, lavatories, &c., for gentlemen. Ascending the staircase we alight on a mezzanine floor, where there is a ladies' room.

The grand staircase is lighted by stained-glass windows by Campbell & Smith, the ornamental iron balustrading being by Messrs. Richardson & Ellson. Communication to and from all the rooms throughout is effected by electric bells by Messrs. Paterson & Co. The upper five floors reached by this staircase, or by hydraulic lifts, contain between 300 and 400 bedrooms, comfortably furnished and decorated, many having sitting-rooms, bath-rooms, dressing-rooms, &c., *en suite*. All the stoves, mantel-pieces, tile-hearths, marble fenders, mirrors, upholstery, and furnishing are by Messrs. Maple & Co.; all tile dados, walls, and flooring by Messrs. Simpson & Co.; and all the sanitary fittings, baths, lavatories, &c., by Messrs. George Jennings & Co. The floors are constructed fireproof up to the first floor by Messrs. Dennett & Ingle. The whole of the graining has been done by Mr. R. Osmond.

The steam-power located in the basement consists of two large steam boilers by Galloway, of Manchester, for providing steam and hot water for baths, and for cooking and heating purposes, as well as for working the pump of the hydraulic lifts. Here is also located plant in duplicate for providing 1,000 incandescent lights of 20-candle-power each. This consists of two steel boilers made by Messrs. Adamson & Co., of Manchester, each capable of supplying steam of 150 indicated horse-power, and two compound vertical high-speed engines by John & Henry Gwynne, of Hammersmith, each of 125 indicated horse-power, with double-acting feed-pumps by Messrs. F. Pearn & Co., of Manchester; feed water-heater (Berryman's patent) by Messrs. J. Wright, of Tipton, Staffordshire; and dynamos by Messrs. Ferranti, Thompson, & Ince, of Appold-street, Finsbury. The lifts throughout are by the Hydraulic Engineering Co., and the fire hydrants by Messrs. Shand & Mason. The kitchen walls and light courts, as well as the basement offices generally, are lined with Cliff's white glazed bricks. The girders and structural ironwork are by Messrs. Handyside, of Derby; the balconettes, &c., in front, are by Messrs. Macfarlane, of Glasgow; the whole of the locks, &c., are by Messrs. Hobbs, Hart, & Co.; the zinc work, ornamental and otherwise, is by Messrs. Braby & Co., of Euston-road. The staircase is constructed on fire-proof principles, similar to that devised at the Grand Hotel, Charing-cross, by Mr. G. H. Holloway, who has also introduced the same system of ventilation as there adopted in the grand *salon*, &c. The whole of the works have been executed under the direction and personal supervision of Mr. Holloway. Mr. Spencer has been managing foreman throughout.

The architects are Messrs. F. & H. Francis, of Palmerston-buildings, City, and Messrs. Archer & Green, of 19, Buckingham-street, Adelphi, who have acted conjointly.

THE PLACING OF LIGHTNING CONDUCTORS.

The above subject has recently been discussed in the *Baugewerkszeitung* with special reference to the method recommended by Kirchoff. It had been noticed that buildings which were provided with lightning-conductors, and had previously been free from injury, had, since the introduction of gas and water pipes, been injured by lightning. The investigations of Kirchoff and other technical authorities have demonstrated that in fixing gas and water pipes it is not only requisite to modify the lightning-conductors on account of the large quantity of metal contained in the pipes, but that it is advisable to connect lightning-conductors directly with pipes in question. To the absence of this precaution are attributed the facts referred to in the first instance. Kirchoff maintains that no injury to the pipes can ensue in consequence of this connexion existing, while he quotes several instances of pipes which were unconnected with lightning-conductors having been destroyed by lightning. On the other hand, he refers to cases of buildings with this connected arrangement having been struck by lightning without any injury resulting to lightning-conductors or to any portion of the buildings or pipes therein.

The connexion is effected at the base of the rod. Heilmann recommends the driving of an iron rod (about four-fifths of an inch thick) rather deep into the ground when foundations are being laid. By riveting, &c., the rod is gradually lengthened during the building of the house. It is solidly fixed to the masonry of the chimney, and thence continued to a suitable height above the summit of the building.

DYNES HALL, HALSTEAD, ESSEX.

This ancient Queen Anne mansion has now been completely remodelled and restored under the direction of Mr. John Birch, of John-street, Adelphi, London, who has rebuilt Grafton Hall, Everleigh, and other important historical houses, and is now rebuilding Ingestre Hall. The original mansion of Dynes was erected in 1575 by William Dean, who married Anne, Lady Maltravers, the only daughter and heiress of Sir John Wentworth, of Gosfield, from whom she inherited an immense fortune; she died without issue, being three times married. The said William Dean planted a fine avenue of elm trees to the mansion, but these were blown down in the terrific storm of 1703. He was succeeded by his son John in 1585, who was knighted in 1603, made High Sheriff of the County in 1610, and filled the office of Lord Lieutenant. He married a daughter of Sir Drue Drury, of Suffolk, and died in 1625. His son and successor Drue Dean, knighted in 1627, married a daughter of the Earl of Norwich, who died in 1637. His son Anthony became the imprudent possessor of this fine property, for, as is observed by Mr. Holman, "being very much addicted to the Parliament's cause, and presuming the structure then raised would have stood for ever, he exchanged his fair estate here with Col. Sparrow for Hyde-park, which that Colonel had obtained in consideration of his zeal for the same prevailing cause: thus he lost the substance for the shadow." The purchaser was John, son of Mr. John Sparrow, of Gestingthorpe, who was succeeded by his heir, John Sparrow, who lived at Dynes Hall. He, by his will, settled the estate in trust for the payment of his debts, and it was sold to Mr. Mark Enyon, son of a wealthy manufacturer of Coggeshall. He pulled down a large portion of Dynes Hall, which he rebuilt in a more durable and lasting manner. He was High Sheriff in 1676, and was knighted. Sir Mark, by his will, gave Dynes to his son, failing him to his two daughters. The son died without issue, and the property fell to Elizabeth, who married Mr. Edward Bullock, of Taulkbourne Hall; she dying in child-bed, the estate went to the younger daughter, Rachel, from whose executors the property was purchased by Mr. Henry Sperling, and is now held by Mr. Charles B. Sperling, a descendant of this family, in whose possession this estate has remained for about 140 years.

The west wing, erected during the reign of Queen Elizabeth, which had much fallen to decay, has been almost wholly rebuilt on the old lines, with handsome gables, dormers, and chimney-heads to accord with the architecture of the main building, the south portion being treated in order to enhance the grandeur and importance of the entrance front, which is on this side of the mansion, and to add dignity to the structure as approached from the north-east, which is now rendered more picturesque as viewed from the charming pleasure-grounds and lake. The main building, erected during the reign of Queen Anne, has been entirely restored, and much improved in appearance by new plate-glass windows and chimney-heads, &c. A handsome new drawing-room has been added to the north-east side of the house, with a large projecting east window, of noble proportions, executed in stone. This room is fitted up with the old original carved oak panelling, removed from the west wing, which has been carefully restored, adapted, and re-fixed, the doors and the large chimney-piece extending to the ceiling, with their linen panels, masks, and other carved work, being exceedingly quaint. The beautiful oak panelling and chimney-piece in the library, which had been smothered with paint, has been restored to its original state. All the water supply, drainage, sanitary arrangements, warming, ventilation, &c., have been entirely remodelled and re-arranged on the latest and most improved principles. The general works have been executed by Mr. H. Runnacles, and the other works by Messrs. Haden & Son and Messrs. John Bryden & Sons.

EXPERIMENTS IN FIRE-EXTINCTION.

On Wednesday afternoon last some interesting public experiments in fire-extinction were made on the vacant land in Whitehall-place. The main object of the experiments was to demonstrate the efficiency of a combined chemical and manual fire-engine, brought out under the auspices of Mr. James Sinclair, of London and Manchester, whose name has been before the public for nearly twenty years in connexion with Dick's self-acting "Extincteur." Shortly stated, these and other appliances made by Mr. Sinclair are intended to extinguish fire by means of water highly charged with carbonic acid gas. The materials used in generating the gas are bi-carbonate of soda and sulphuric acid. The soda is dissolved in the water with which the vessel is filled, and the sulphuric acid is confined in a glass bottle or other receptacle enclosed within or forming part of the apparatus until necessity arises for using the engine, when the sulphuric acid can be immediately liberated and mixed with the water, the result being a chemical solution highly charged with carbonic acid, and which is discharged from the engine under considerable pressure. The "combined chemical and manual fire-engine," and the "brigade engine" are the newest adaptations of the principle of "L'Extincteur." In the former, hand-pumping is resorted to for projecting the water to a greater distance than it would otherwise reach.

This combined chemical and manual engine was first tested in the experiments of Wednesday last. Two temporary structures or stockades of wood, the largest of which was some 25 ft. long by 5 ft. or 6 ft. broad and 12 ft. or 14 ft. high, were formed of a number of planks and poles set up on end a few inches apart, so as to allow of the free access of air to aid combustion. Underneath and between these vertical pieces of wood were tar-barrels, shavings, &c., the whole being sprinkled with petroleum so as to get well alight in a short time. As soon as the largest structure was fully ablaze two jets of chemically-charged water from the manual engine were made to play upon it, and in three minutes the whole body of blazing wood was a charred and smoking ruin. The opinion was expressed by one of the visitors that if this engine had been brought to bear upon the recent great timber fire at Haggerston, a speedy end would have been made of the firemen's labours, and much valuable property and great hardships to many poor people would have been saved.

The concluding experiment afforded a signal demonstration of the power of the portable *Extincteur*. Some eighty gallons of tar having been poured into a shallow depression made in the ground, so as to form, in fact, a pond of tar of about 80 square feet in area, a few gallons of petroleum were poured on to it at one part, so as to facilitate the ignition of the whole surface. When this had been thoroughly effected,—the terrific blaze being accompanied by a stifling heat and a cloud of black smoke which would have horrified the members of the Smoke Abatement Institution,—Mr. Sinclair, wearing an ingenious though very "uncanny"-looking respirator, fitted with Professor Tyndall's smoke-filter, advanced to the edge of the fiery lake, upon the surface of which he directed the stream of carbonic acid and water from a small *Extincteur*, when lo! the flames were completely extinguished in about thirty seconds! The effect seemed magical, but a reminder of its reality was afforded by the dense cloud of smoke which was being borne across the river in the direction of the Shot Tower after the fire was extinguished.

The experiments conclusively showed the value of chemical agency as an aid in fire-extinction. Mr. Sinclair, in the course of a few observations addressed to the visitors, said it was quite time that the practicability of this oft-demonstrated fact should be recognised by

our public authorities and fire brigades, as it *was* recognised by the municipalities and fire brigades of America. Certain it is that the time-honoured use of water, unassisted by some such chemical means as those here referred to, often fails lamentably, as we took occasion to note in connexion with the burning of the Alhambra Theatre, and as was shown very recently at Haggerston.

ST. MARY'S CHURCH, CATERHAM, SURREY.

About fifteen years ago it was decided that the old parish church at Caterham was past repair, and that a new one should be built on a different site to supersede the old one. It has now become necessary to enlarge the new one, and a south aisle, with a tower and spire at the west end, is in course of erection, from the design of Mr. Wm. Bassett-Smith, John-street, Adelphi.

The aisle, when completed, will have an arcade of four arches opening into the nave; at the east end it is proposed to carry on an aisle to the south side of the chancel, with two arches opening into the chancel. The total extra accommodation provided will be for 200 adults.

The lower part of the tower will be used as a porch, both for the nave and aisle; and it is hoped ere long a peal of bells will be heard from the belfry.

The works are being carried out by Messrs. Wall & Hook, of Brimscombe, and the estimated cost of the whole is about 3,400*l*.

The old church, which is still in existence, has some fragments of very early work. There is part of a Norman window on the south side, and on the north and south sides of the chancel there are arches of thirteenth-century work, with carving to the capitals.

SALFORD SEWAGE WORKS.

The opening of the pumping station and outfall works at Weaste, a suburb of Salford, marks the completion of an extensive and costly system of main drainage for that borough.

The total outlay on the intercepting system for the borough amounts to 200,000*l*., and as the entire scheme has been carried out almost without intermission from its first conception to the completion of the outfall works, it is perhaps the most systematically arranged and consistently carried out of any works of a similar kind in England, excepting as a matter of course the drainage of the metropolis.

Ten years ago the Corporation, with a laudable determination to face this difficulty, resolved to intercept all the sewage of the borough from the River Irwell, a stream then, and even now, polluted to an exceptional degree by town refuse and filth of every kind. As in nearly all towns situated on rivers, the subsidiary sewers were found to gravitate to the stream, and the first and most essential part of the undertaking which the Corporation had to carry out was the construction of an intercepting culvert which should traverse the lowest part of the borough, and pick up all the existing drains before reaching the river. This sewer is 8 ft. 9 in. by 7 ft. 6 in. at the point where it discharges into the river below the urban part of the borough, and passing upward towards its source the sewer is gradually reduced in dimensions. The upper lengths of the sewer are egg-shaped, the smallest dimensions being 4 ft. by 3 ft. The total length of the main intercepting sewer is four miles and four furlongs, and there is a subsidiary intercepting culvert which collects the sewage from the higher parts of the Pendleton district of the borough, leading it direct to the tanks so as to avoid the cost of pumping, which would be necessary if the discharge were allowed to pass into the main intercepting sewer.

The principle which the Corporation decided upon for the treatment of the sewage is that of precipitation, and the works have been arranged for carrying out this process. There is a series of six tanks arranged end to end, the partition between each tank and that next to it being 6 in. wer than the partition immediately above it, so hat the sewage flows from one tank to another hrough the whole series. The same arrangement is provided in duplicate, which admits of one set of tanks being cleaned out while the other set is in use.

The tanks are intended to deal with twelve million gallons of sewage daily, though this quantity is considerably in excess of what at present passes into the sewerage system. The population of the borough at the present time is 177,000, and the domestic consumption of water 21 gallons a head, but there is a very large amount of water used for manufacturing purposes, chiefly in dyeing and bleaching.

The water area of the tanks is 12,360 square yards, and the average depth is 7 ft. At the present time the Corporation are employing lime as the precipitant, but owing to the large amount of colouring matter in the sewage, the effluent water is not as colourless as could be desired, and a material known as alumino-ferric is being tried experimentally, with very good results so far. Alumino-ferric differs but little from crude sulphate of alumina. It is a very effectual precipitant, but its action is slow, and the addition of a little lime is found desirable to hasten the settlement of the deposit.

The engine-house is erected on the lower part of the ground close to the outfall sewer, and the mixing-house is placed close to the end of the tanks. These buildings, of which illustrations are given at pages 688 and 697, are built of white and red stock bricks, with mouldings and cornice of terra cotta, combined with red sandstone from Runcorn, the colours of the several materials harmonising satisfactorily.

The engines and pumps are in duplicate. The engines are of the vertical type, compound in their arrangement, the high and low pressure cylinders being placed above the rest of the machinery, after the modern type of marine engines. The pump cylinders are immediately below the steam cylinders, so that the pressure of the steam is applied with the most direct action to the pump plungers. The pumps are double-acting, and each pump is provided with two suction and delivery air-vessels.

Each engine is capable of being worked up to an effective energy of 225-horse-power, which is sufficient to raise the ordinary flow of sewage to the tower of the mixing-house, the total vertical lift from level to level being 43 ft. The second engine will only be required during times of rainfall or whilst the first engine is under repair. The rainfall provided for, somewhat exceeds ¼-inch in the day, as provision is made by storm overflows for relieving the intercepting sewer when the rainfall is excessive. The sewage is lifted from the sump and passes to the mixing-house through a pair of 30-inch mains. At the base of the tower of the mixing-house is placed a cast-iron tank, into which the sewage is first delivered, and here the lime or other precipitant is added to the sewage. From the bottom of this tank the sewage passes through another pair of 30-inch mains to the end of the tanks most remote from the mixing-house, and having been delivered into the first tank passes through the whole series of tanks, and flows slowly back towards the mixing-house. The greater part of the precipitate remains in the first and second tanks, the quantity diminishing in each succeeding tank until in the last tank there is little, if any, deposit, and the purified effluent flows away, passing into two small chambers where a pair of vortex wheels of 25-horse-power each are fixed. The purified sewage in its descent of 15 ft. drives the turbines, and the power thus developed is employed to actuate the mixing machinery and pumps within the building, and thus a certain economy is effected as steam-power, would otherwise have to be employed.

The mixing machinery consists of a pair of large cast-iron pans, in which the lime is incorporated with the requisite quantity of water by means of revolving arms and plates attached to them obliquely. In order to insure that exactly the requisite quantity of lime shall not be exceeded, and to avoid the waste which usually results from the employment of manual labour, a lift or hoist is provided for measuring the lime. The hoist consists of a number of buckets attached to an endless band, somewhat similar to the arrangement used in a flour-mill. The buckets raise the lime, which first passes through a screen, from below, and deliver it into a funnel-shaped receptacle into which a spray of water under pressure discharges, and thus the lime is carried forward into the mixing-pans. From the pans the limed water is pumped up to the tower, where it is delivered into the sewage-receiving tank, the lime-pump making one stroke for every stroke of the pumping-engines.

There is a second pump provided for raising the clarified sewage from the turbine wheels to a tank placed on the top of the mixing-house tower, and this tank furnishes a supply of water for slaking and mixing with the lime. The outfall works have been designed and carried out by Mr. Arthur Jacob, M.I.C.E., for the Corporation, and the contracts for the tanks and buildings have been satisfactorily completed by Messrs. S. W. Pilling & Co., of Manchester. Messrs. James Watt & Co. have erected the engines and pumps.

NEW GRAMMAR SCHOOL BUILDINGS, HIGH WYCOMBE, BUCKS.

The Duke of Buckingham (the Lord Lieutenant of the county) a short time since opened the new buildings of the Royal Grammar School, High Wycombe, of which we give an illustration. For about 300 years the school has been held in buildings which, about the year 1563, were converted from the old Norman hall and chapel into a master's residence and schoolrooms. Fortunately little of the interesting stone-work of this secular Norman building was injured. The best part of the work has been left standing as a ruin in front of the new buildings, and will well repay the investigation of the peripatetic archæologist. The remains thus preserved are more numerous than those displayed upon the illustration. The new building comprises a house for the master, and accommodation for twenty boarders and one hundred day scholars. The materials are of red and white brick, with Staffordshire tiled roofs. The total cost will be about 4,500*l*. The works have been carried out by Mr. W. R. Loosley, contractor, High Wycombe, under the direction of the architect, Mr. Arthur Vernon, of 26, Great George-street, Westminster, and High Wycombe, Bucks.

THE PRINCE'S HOTEL.

The block of buildings shown in the illustration is now being erected at the angle of Coventry and Whitcomb streets, as seen from Leicester-square, on the line of the widened street to Piccadilly.

It is intended for a first-class hotel and restaurant, having grill-room, buffet, and dining-room in the Whitcomb-street frontage, with private dining-rooms occupying the whole range of the frontage on the *entresol*. There will be also about one hundred bedrooms, the kitchens being on the upper floor.

The ground-floor of the Coventry-street façade is arranged for eight shops, with good basements. The total frontage of the hotel is 200 ft.; beyond this are the entrances to the Prince's Theatre, at the angle of Coventry and Oxendon streets, as shown at the extreme right of the view, surmounted by a cupola.

The material used for the frontage is Portland stone.

The contractors are Messrs. W. & D. Mc Gregor, of London and Edinburgh, who have introduced the mode of building common in Scotland, by steam-cranes without any external scaffolding.

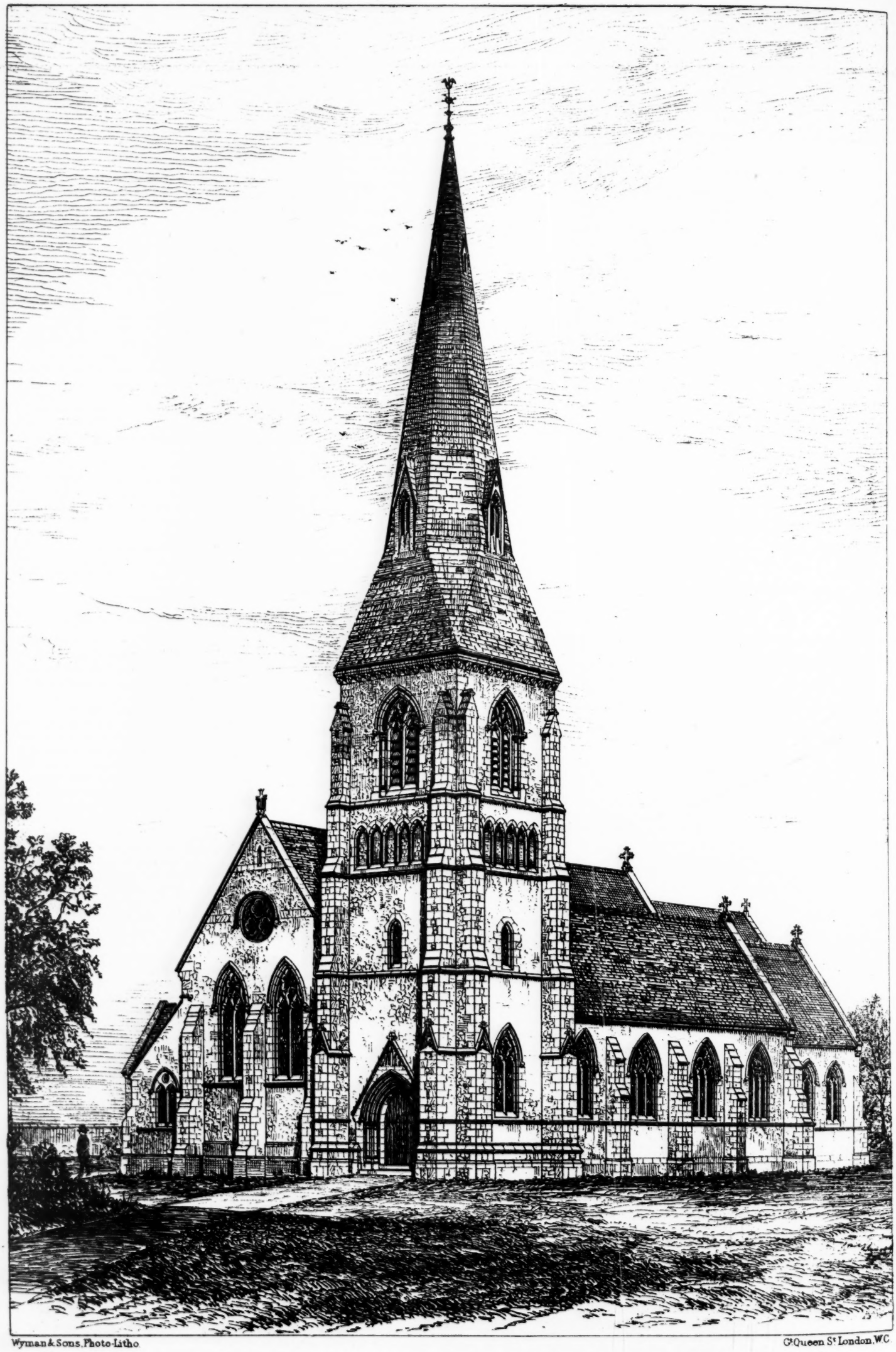
The whole of the floors throughout the building are of iron and cement concrete, covered with Burnetized wood block paving.

The works, both of the hotel and the theatre, are being carried out from the designs and under the superintendence of Mr. C. J. Phipps, F.S.A., architect, of Mecklenburgh-square, London.

The theatre, which is quite distinct from the hotel, occupies the whole of the frontage in Oxendon-street and Whitcomb-court.

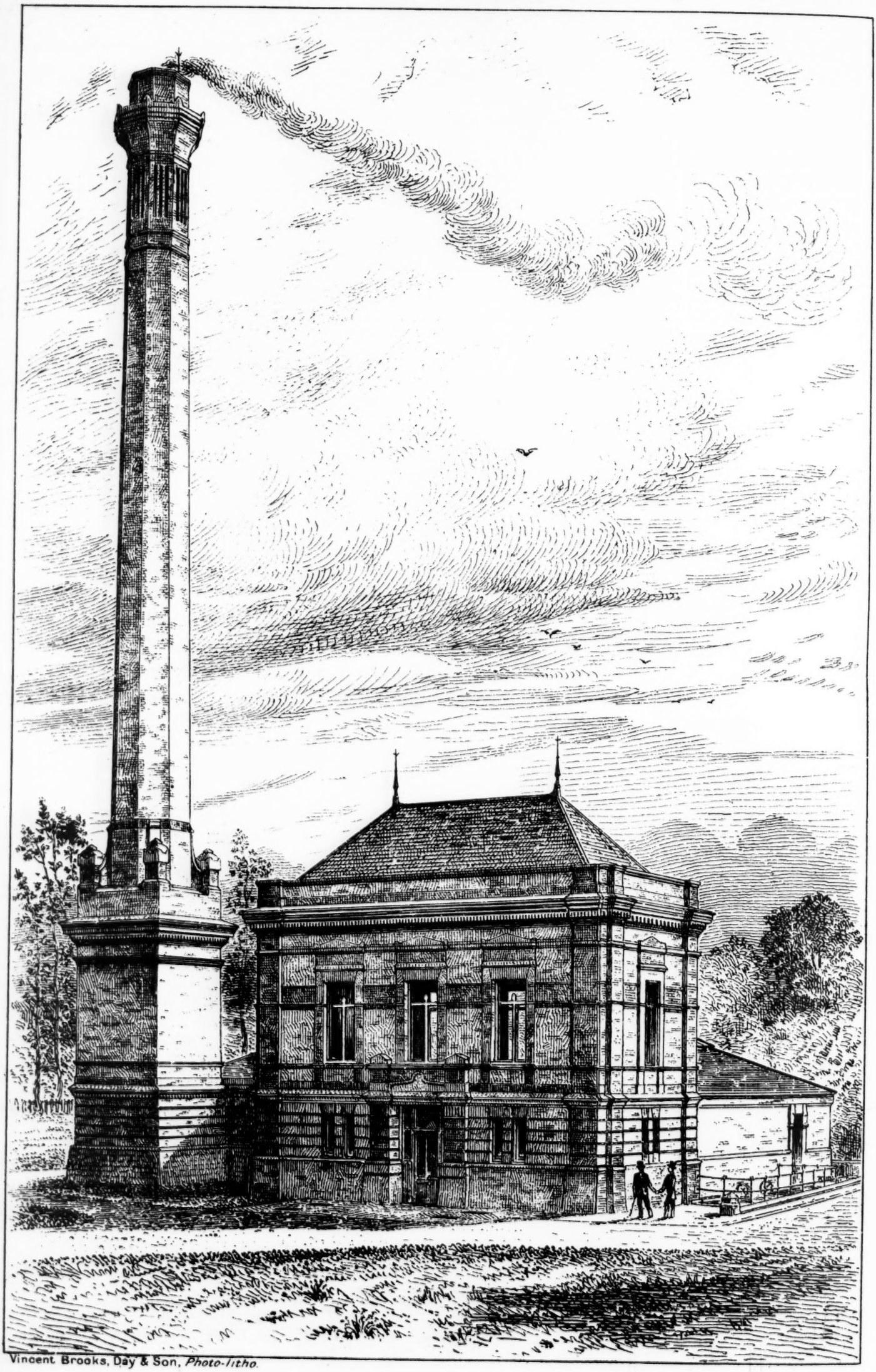
It will be opened by Mr. Edgar Bruce early in 1884.

Architectural Restorations at Konigsberg.—The German technical press has of late given prominence to various interesting features in connexion with the above subject. The restoration of portions of the Rathhaus will be proceeded with again next year, the original forms of the gables in course of treatment being preserved. The interior of the Marienkirche is still the object of much attention, but it is hoped that the end of next year will witness the termination of the work now being actively proceeded with. It is suggested to restore the Bernickow and Schwedte portal towers in a style which would harmonise with their original architectural features.



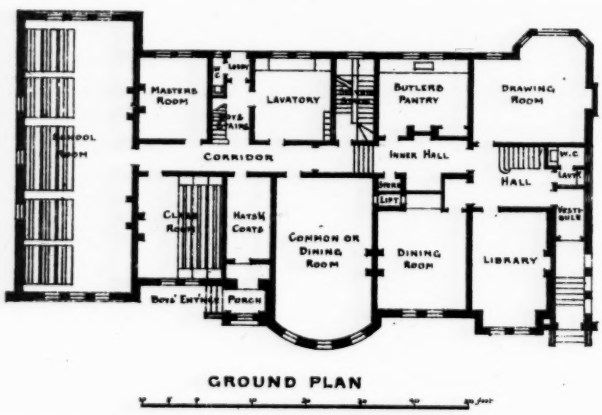
Wyman & Sons, Photo-Litho. 74 Queen St London, W.C.

NEW TOWER, ST. MARY'S CHURCH, CATERHAM.——Mr. W. Bassett Smith, Architect.



Vincent Brooks, Day & Son, *Photo-litho.*

SALFORD SEWAGE WORKS. ENGINE HOUSE. MR. ARTHUR JACOB, ENGINEER.



GROUND PLAN

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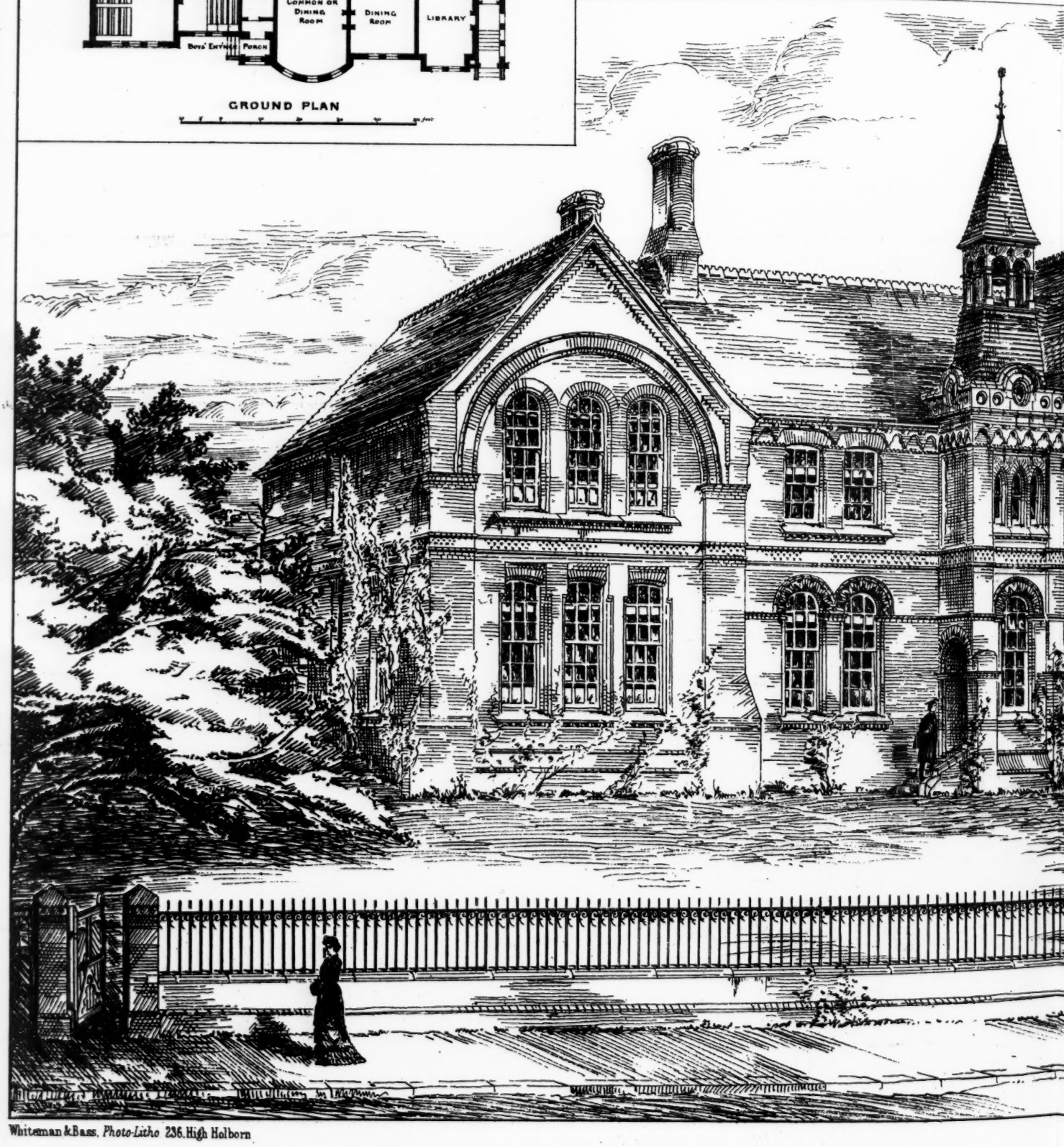

Whiteman & Bass, *Photo-Litho* 236, High Holborn

BUILDINGS
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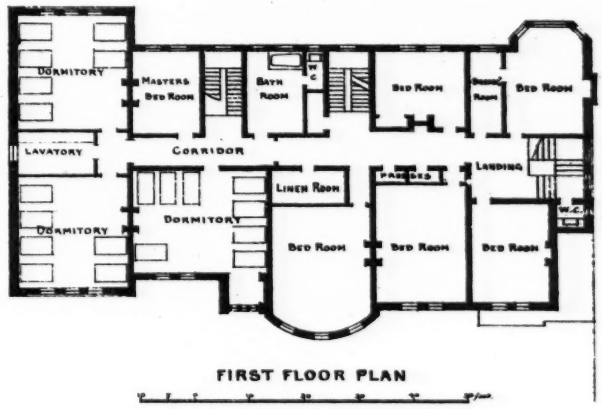
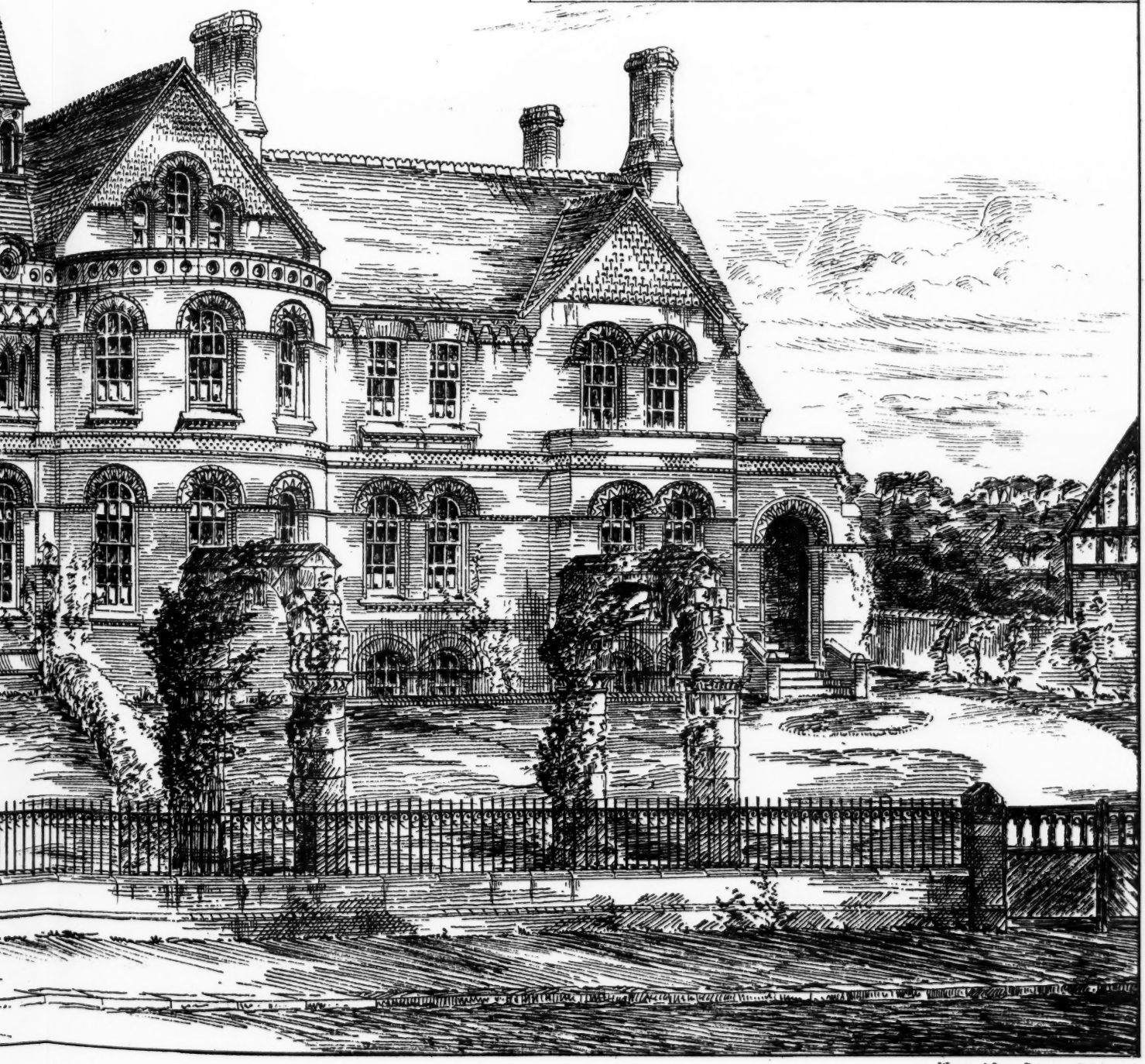
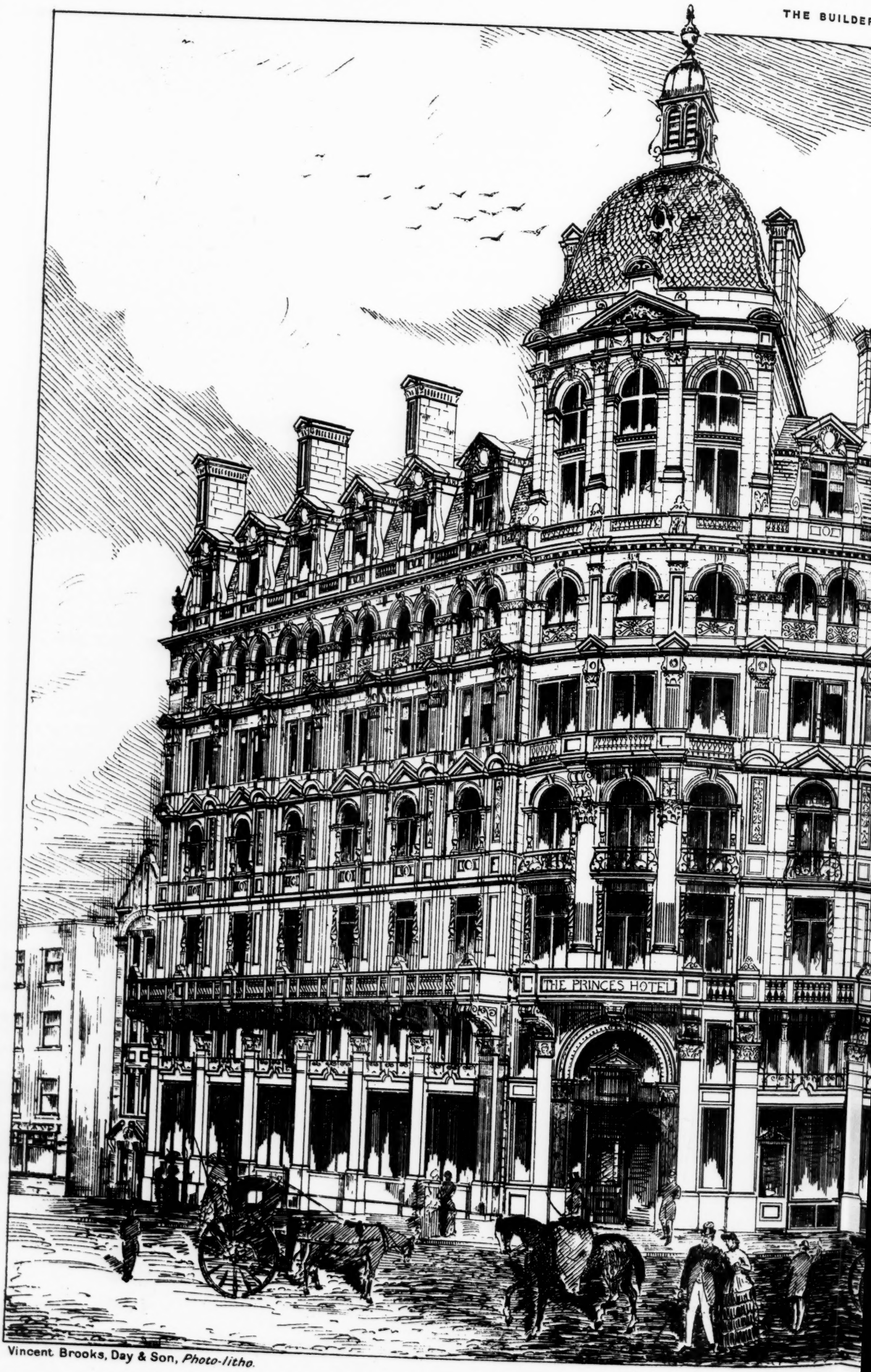


FIRST FLOOR PLAN

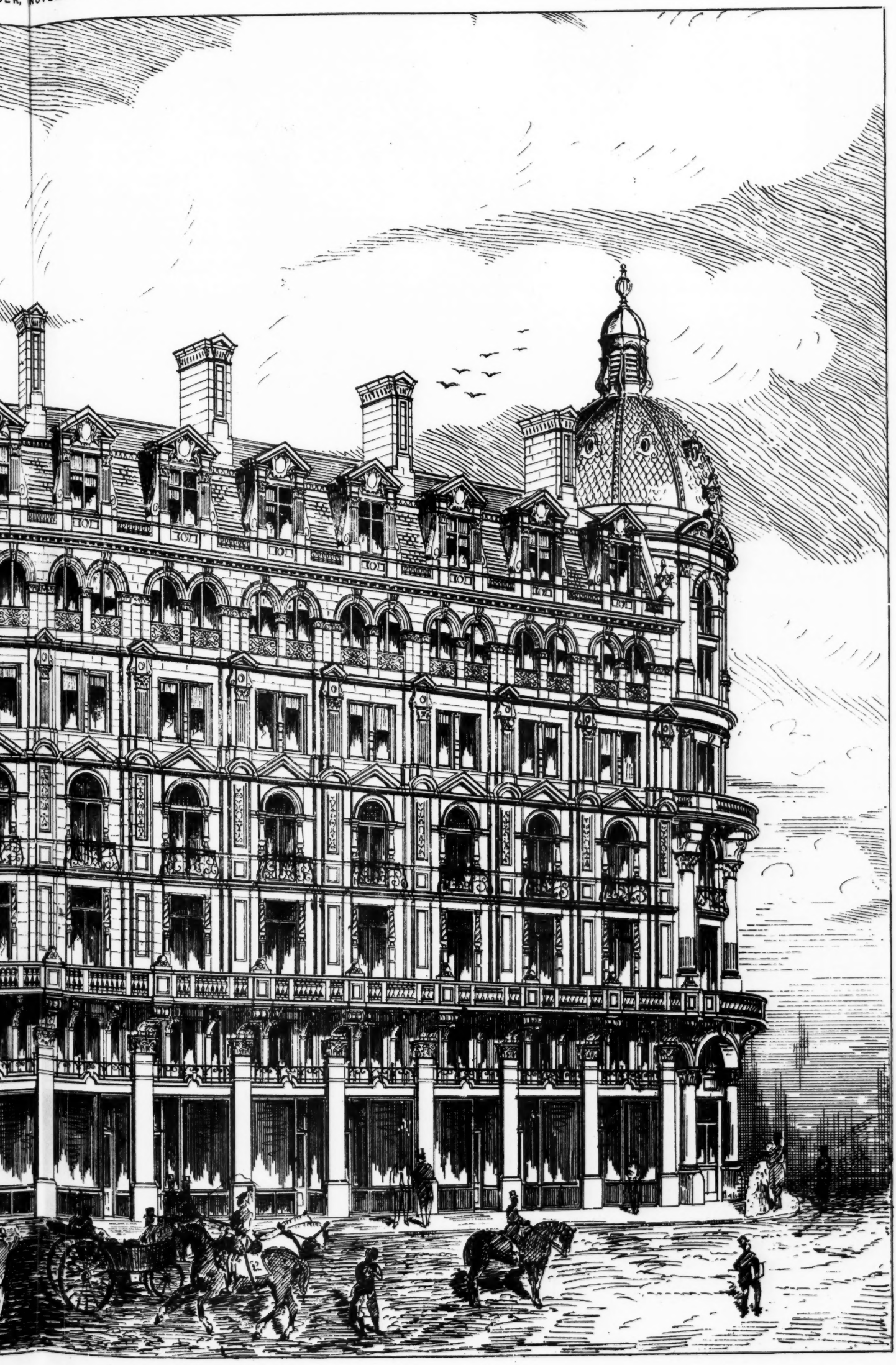


Wyman & Sons, Printers, Gt Queen St.

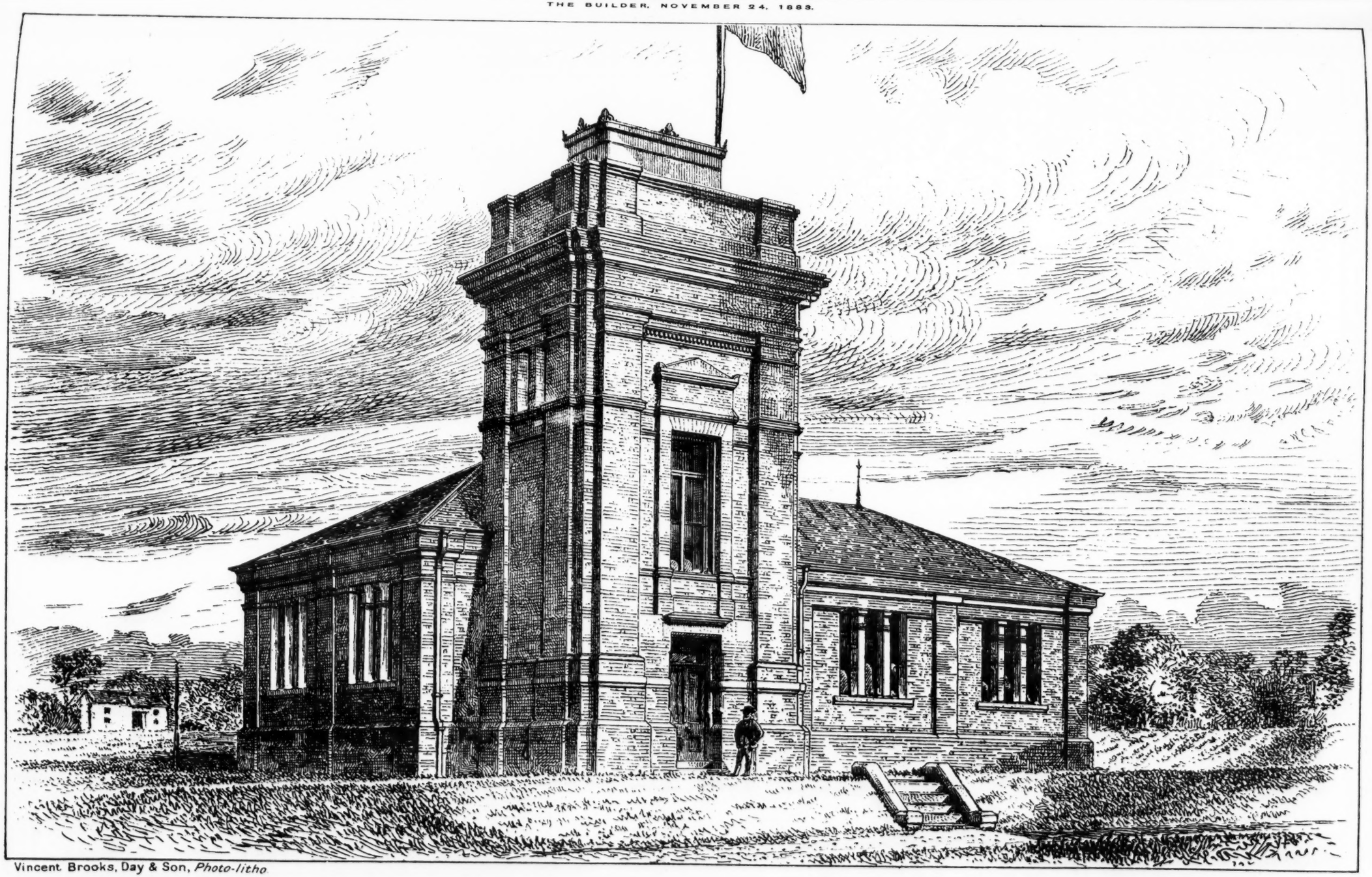


Vincent Brooks, Day & Son, *Photo-litho.*

THE PRINCES HOTEL, COVENTRY STREE



TRY STREET, W. C. J. PHIPPS, F.S.A., ARCHITECT.



Vincent Brooks, Day & Son, *Photo-litho*

SALFORD SEWAGE WORKS. MIXING HOUSE. Mr. Arthur Jacob, Engineer.

Whiteman & Bass. *Photo-Litho.*

Wyman & Sons, Printers.

DOOR DECORATION.——By George Chas. Haité.

DOOR DECORATION.

The door, which is so frequently a source of anxiety to the ornamentist and decorator, might be made the means of greatly enhancing the artistic completeness of a room. Much of the difficulty experienced in its treatment arises from the desire to disguise its functions. For this reason doors having their panels covered,—I cannot say decorated,—with wall-papers, &c., no matter how beautiful or costly, fail to please, and the palpable effort at disguise is not only bad but reprehensible, and whenever the position or purpose of a door is thus sought to be hidden, the result is a failure.

In modern-built houses the architects are devoting more care and thought to the design and proportion, and the cabinet-maker to the construction, than hitherto, and it is now, fortunately, not uncommon to find doors so original, thoughtfully proportioned, and broken up into panels that they are in themselves perfect, and, as a piece of decorative work, charming. An attempt to still further decorate such doors as these would be unpardonable; and a piece of vanity on the part of the artist; but, on the other hand, there are thousands of houses,—many of a superior kind, if we take the rental as a criterion,—the rooms of which are positively disfigured by doors out of all proportion to their position, many being too short and wide, too high and narrow, or in an intermediate state, which is more aggravating than either, effectually preventing a successful treatment of the room as a whole. Such doors form a stumbling-block and eyesore to many otherwise comprehensive schemes of decoration. The embellishment becoming a necessity, the difficulty is,—what to do? It may be only necessary to decorate it slightly to harmonise it with the rest of the room, or it may require much more substantial and heavy treatment, both in ornament and colour; the surroundings will, of necessity, determine this point. A most satisfactory and effective treatment is to be obtained by outlining the design in warm browns, allowing the figure of the wood to show through, but the door must be a new one, and capable of such treatment; if, on the contrary, as is far more likely, it be an old and badly-painted door, then some such treatment as I have shown in my illustration would prove effective. The dimensions of the panels were taken from an existing door divided into four, those shown being the upper ones. This door being disproportionate, and the panels consequently so, it has been sought to make it appear wider by running the flower-spray behind the centre stile into the other panel; * had the panels been too wide, a contrary treatment would have been followed. The desire to elongate panels may be realised by each having a separate design of some upward growth, and, if found necessary, marginal lines to still further help the illusion.

We might advantageously make our doors an object of interest by using them as an opportunity for displaying decorative ornaments. In such positions there is more latitude allowed, and a greater freedom to the artistic fancy; thus, representations of the figure, birds, animals, &c., are here permissible, all of which are out of place and unfit for the walls of our dwelling-rooms, owing to the necessary repetition becoming objectionable and devoid of beauty, and to the accessories hiding and mutilating their parts.

The subjects for such panels should bear the impress of having been designed to fit the place they occupy, and for no other purpose. There is plenty of scope for our selection, the panels of doors offering not only a valuable and legitimate means for the display of the wood-carver's art, but for porcelain-painting, inlay, hand-painted or stencilled ornament, needlework, painted silk or tapestry, the latter being sometimes particularly pleasing and effective.

Geo. C. Haité.

The New Alhambra Theatre.—It is announced that this new theatre, having been completed in accordance with the regulations of the Metropolitan Board of Works, will be opened to the public on Monday, December 3rd.

* This may be accepted as a motive for the treatment referred to in special cases; but, in general, we object to running the design through from one panel to another, as contradicting the actual construction [of the door, and making the panels appear as one piece overlaid by the stiles.—Ed.

LEYTON SEWAGE WORKS, ESSEX.

At the invitation of the Rivers Purification Association, a considerable party of gentlemen interested professionally and otherwise in the subject of the treatment of sewage assembled at the new works of the Association at Leyton on Wednesday last, to witness the operations for the purification and disposal of sewage. The system adopted is the same which has been in operation for some years past at Coventry, as described by us in a former volume. The site, about half a mile from Leyton Station, is one which admits of the gravitation of nearly all the sewage to the works without the cost of pumping. The works were designed by Mr. J. C. Melliss, C.E., and were commenced in September, 1882. They are of sufficient capacity to deal eventually with a population of 60,000 to 70,000, needing for that purpose only some slight additions, chiefly in the tanks, which can be done at a trifling cost as the population, now about 27,000, grows towards the larger number above named.

The sewage of the district is conveyed to the works by three outfall sewers from different parts of the drained area, the Fillebrook, the North Leyton, and the South Leyton systems of sewers. This sewerage was carried out by Messrs. Bailey Denton, & Co. The object of the treatment is the separation of solid from liquid sewage, the purification of the liquid portion to such an extent that it can innocuously be run into the river (the Lea) and carried away, and the reduction of the solid matter into a convenient form for its utilisation as manure.

The visitor, on coming upon the ground, sees several large open reservoirs, mostly filled with water, backed by a low range of brick buildings. In one room in these buildings the sewage in its gross state is poured from the sewer outfall into a well, whence the solid matter is drawn out slowly by a screw elevator, and deposited in a trough, while the liquid is being pumped up and driven against and through the sieves of a strainer in the form of a large revolving wheel. From this room (the only portion of the works where any strongly disagreeable smell is perceptible) the liquid flows into the tanks before mentioned, each of which is divided at about two-thirds of its length by a brick weir. Before arrival in the tank it is chemically treated with salts of alumina and iron, and a little lime, the result of which is to precipitate the remaining particles of solid matter to the bottom of the tank (where it is found in a thin coating of sludge when the water has been allowed to run off), the water flowing in a thin layer over the top of the brick weir into the smaller division of the tank, where it is allowed further to settle and is then run off down a sluice lined with glazed tiles into the drain leading it away to the river. The water at this point is certainly fairly pure, and has no smell, and after mixing with the river water may be considered to be harmless. The solid matter, which parted company at the first stage of the proceedings, is first stored in tanks, in a very wet state, and then pumped under heavy pressure through presses of the form known as "Johnson's presses," consisting of a number of iron plates with canvas bags between them, which are screwed up together by hand levers, and on the sewage being forced through the press, by the pressure of an air-accumulator, the solid matter is left between the metal plates in the form of nearly dry cakes of sewage deposit, while the water is forced out through the canvas-strainers and drops into a surface-drain on the floor, finding its way back into the sewer. On unclamping the press the solid matter falls out in the form of cakes a little more than an inch in thickness, having lost in the press 80 per cent. out of the 90 per cent. of water which it originally held. The only practical deficiency in this part of the working seemed to be the rather rough-and-ready way of removing the sewage-cakes, which are allowed to fall where the water fell before, and are then removed by shovels. A wheel trolly to run under the press to receive them and then to be drawn out bodily, would seem a more convenient method, and would waste much less time.

The sewage in this form is sold to neighbouring farmers and utilised, but not at a remunerative price, nor is there any pretence that the operations are or could be commercially profitable on a self-supporting basis. The matter is a piece of public sanitary work, charged upon the rates, and the Local Board of Leyton have contracted with the Rivers Purification Association to carry on the work at an annual cost of about 1,200*l*. The operations are under the immediate superintendence of Mr. Coddington, the general manager.

THE CITY CHURCH AND CHURCHYARD PROTECTION SOCIETY.

At a meeting of the City Church and Churchyard Protection Society, held on Wednesday last, the Earl of Devon presiding, the honorary secretary, Mr. Henry Wright, drew attention to the letter written by Lord Brabazon which appeared in the *Times* last week, calling attention to the neglected and scandalous state of some of the disused burial grounds in the metropolis. Capt. Thomas, Secretary of the Metropolitan Garden, Boulevard, and Playground Association, of which Lord Brabazon is the chairman, attended the meeting on behalf of Lord Brabazon. Mr. Wright, as a member of both societies, suggested that the City Church and Churchyard Protection Society should co-operate with Lord Brabazon and introduce a short Bill next Session to amend the Union of Benefices Act, 1860, making it illegal to sell, let, or appropriate the site of any church or churchyard for the purposes of building upon, but that such sites shall be kept as open spaces for ever. Lord Devon pointed out the great difficulty in getting any Bill through Parliament in the hands of a private Member, and thought a deputation to the Home Secretary urging him to introduce such a Bill would be more effective. The following resolution was carried unanimously:—

"That the Council of the City Church and Church yard Protection Society desires to co-operate with Lord Brabazon and the Metropolitan Garden, Boulevard, and Playground Association, in their efforts to preserve the burial-grounds of the metropolis and the remains of the dead from desecration."

Another resolution, moved by Mr. J. Theodore Dodd, seconded by Mr. G. H. Birch, and agreed to, was as follows:—

"That this meeting views with deep regret the proposal to pull down, desecrate, and disendow the churches of St. Olave, Jewry; St. Katharine, Coleman; and St. Thomas, in the Liberty of the Rolls, as causing scandal, and disturbance of the remains of the dead, besides being an injustice to the resident parishioners."

A gentleman present stated that the register of St. Katherine Coleman shows that at the time of the London Plague the burials amounted to forty a day.

On the motion of Mr. H. C. Richards a letter of condolence was directed to be sent to the family of the late Mr. Bowes A. Paice, a member of the council.

LLANBEDR CHURCH, MERIONETHSHIRE.

At the commencement of the year we described improvements to this edifice that were then in contemplation. In the months that have elapsed many of them have been effected, and the work of restoration has been now brought to a close in time for a special harvest festival. It may be remembered this ancient Welsh edifice had been carefully lined with plaster, and most of its ancient features hidden or removed. However, two memorial stained-glass windows had been recently inserted, and there was a general growing appreciation of the fabric as the picturesque work of the masons of former centuries. The inconveniences that were felt to be most pressing in the present day were a want of sufficient light, want of shelter of approach from without, and the want of a vestry in which the officiating clergyman could robe and unrobe out of sight of the congregation. These necessary additions have all been made. The west wall, which was quite blank, has been pierced with a window, and the north wall has been lighted with another of similar design to one already on the same side. A new porch has been built at the western end of the south side, and a new vestry at the western end of the north side. Woodwork has been freely introduced into both these last-mentioned features. The porch is entirely of oak, with open Decorated tracery, and the arch which divides the vestry from the church is filled with a richly traceried oak screen.

Not the least interesting part of the work of renovation and improvement is the removal of the plaster. This has revealed very beautiful colouring in the old masonry, in which the silver grey tints shadow into purple tones. The

chancel arch, which is very hoary and venerable, is composed of large flat stones closely packed on end in a slightly arched curve. Within the chancel, on the eastern wall, the removal of the plaster disclosed a long pointed-headed niche on one side of the east window, and a smaller recess on the opposite side.

It should be added all these works have been made at the cost of Mr. Pope, Q.C., who has a country seat close to the village. Another resident, Mr. Wayne, of Aber-Artro, has conduced to the finished effect of the appearance of the chancel by a gift of dossal hangings and an altar-cloth, as well as a tiled pavement; and three stone finial crosses from the chisel of Mr. MacMillan, Alnwick, have been placed on the apices of the gables by a descendant of former residents in the parish. A lectern has also been presented.

The contractor is Mr. Hugh Evans, Llanbedr; and the architect consulted by Mr. Pope is Mr. F. R. Wilson, Alnwick.

During the progress of the works, opportunity was taken to preserve a relic of still more remote times than the foundation of the church by carefully placing, against the outer side of the west wall, a stone carved with a spiral circular indentation of a similar character to those found on the northern moors in the neighbourhood of ancient British camps.

THE PRIORY CHURCH, CHRISTCHURCH HANTS.

A NEW roof of English oak has lately been constructed, by direction of the Restoration Committee, over the north nave aisle. The roof it replaces had been in so bad a state that it had been necessary to prop it up during the last year or two. It was in a rotten condition, much patched and added to, scarcely any of the original timbers remaining. The new work to a general extent follows the old, so far as the design of the latter could be traced. The timbers are of very substantial scantling, with curved moulded braces, covered with oak boarding. The outer covering is of thick milled lead. Mr. B. Edmund Ferrey, F.S.A., was the architect, and Mr. William Howe, of Christchurch, the builder.

THE HOUSING OF THE POOR.

THE newly-revived question as to the best means of decently housing the poor of London and our large provincial towns continues to be widely (and sometimes wildly) discussed from various points of view. The zeal of some writers and speakers appears to be in inverse proportion to their knowledge of the subject, and not a little of the sensational element is being imported into the discussion, which is one involving grave questions of economy. Many writers and speakers are amusingly oblivious of what has been done years ago in improving the condition of the dwellings of the poor. For instance, the readers of a leading provincial paper were informed by it the other day that the Earl of Shaftesbury was "beginning" to turn his attention to the solution of the problem! The writer had evidently never heard of the long-established Metropolitan Association for Improving the Condition of the Labouring Classes, nor of the good work that society has done under the leadership of Lord Shaftesbury in providing healthy dwellings for the poor, partly by erecting new buildings and partly by converting existing buildings into healthy tenements. Lord Shaftesbury certainly knows something of the subject, and he has lately stated that bad as things now are in this particular, they are not so bad as they were. They are bad enough, no doubt, but an adequate solution of the problem is not likely to be helped forward by exaggeration.

From among the many utterances on the subject which are coming thick and fast at the present time we quote from a letter by the Rev. S. A. Barnett, Vicar of St. Jude's, Whitechapel,—a clergyman whose active work in and close knowledge of a crowded neighbourhood give him some right to be heard on the question. He writes to the *Times*:—

> In 1876, upon a representation made by twelve ratepayers through the Medical Officer to the Metropolitan Board of Works, the dwellings of 4,000 persons in this parish were at once condemned as uninhabitable, and the official scheme for their demolition and reconstruction was prepared. During the next four years the "scheme" ploughed its course through arbitration and compensation with a slowness somewhat puzzling to those who note how rapidly the poor are removed when great money-getting projects are on foot. It was indeed a "killing slowness," for during all these years landlords whose claims had been settled spent nothing on further repairs; tenants, expecting their compensation, put up with any wretchedness; while the Vestry, looking to the approaching reconstruction of the houses, let streets and footways fall to pieces. In 1879 the Guardians of the Poor vainly impressed upon the Board of Works that eighty per cent. of the paupers of the district came from houses in the long-condemned area. It was not, however, until 1880 that the needful demolition was seriously begun. Since that date the houses of some thousands of the poor have been destroyed. Meanwhile, there have been persons willing to buy plots, large or small, at the price at which land has been sold for such purposes in the neighbourhood, to proceed forthwith with the reconstruction of the demolished dwellings. Nevertheless, it required two years negotiation with the Metropolitan Board before one small plot could be purchased, whereon rooms for forty families will now be at once provided by voluntary effort. An offer for a larger plot, made as soon as the houses had been emptied, was postponed, with the answer that the ground must first be cleared; yet, though the prompt erection of dwellings for the unhoused has been thus prevented, it has been already found possible to build a public-house upon the site. . . . .
>
> Such is the seven years' history of the Artisans' Dwellings Act in a parish under the rule of the Metropolitan Board of Words. It tells its own tale, without complaint of mine. The slowness of the first four years, the wholesale evictions of people for whom no new homes had been provided during the last three years, have alike been "killing;" but I wish only to emphasise two conclusions to which this history points:—
>
> (1.) The prime source of the evil is not in the law, but in the local administration.
>
> (2.) It is only where some individual interest is concerned that the *vis inertia* of the local administration can be overcome.
>
> The further conclusion which I would draw is not that Londoners should put trust in what some municipal government of the future may do for the people, while the rest of us look on (the articles on "Squalid Liverpool" lately published in Liverpool papers challenge that hope), but that individuals must make these things their interest. The best system of government, like the best laws, will be ineffective until Londoners take a more active and individual interest in the condition of the people.

THE PROGRESS OF THE WORKING CLASSES IN THE LAST HALF-CENTURY.

ON Tuesday evening, at the Royal School of Mines, Jermyn-street, Mr. Robert Giffen, LL.D., of the Board of Trade, delivered the inaugural address of the 50th session of the Statistical Society, of which he is president, selecting as his subject "The Progress of the Working Classes in the last Half-century." In the course of his remarks he estimated that during this period there had been a rise in money wages ranging from 33 to 85 per cent., while at the same time the hours of labour of the working classes had diminished very nearly 20 per cent. The workman of to-day received from 30 to 100 per cent. more money for 20 per cent. less work; in round figures, he had gained from 50 to 100 per cent. in fifty years in money return. Concerning changes of prices of commodities, there seemed to be little doubt that things were much the same as they were forty or fifty years ago. On the whole, the sovereign goes as far as it did forty or fifty years ago, while there are many new things in existence at a low price which could not then have been bought at all. Though various commodities had fallen in price, however, house-rent had increased, and much was said of late of the high price of rooms in the slums. Taking things in the mass it was found that however much some workmen might suffer, house-rent in the aggregate could not have greatly augmented. His estimate was that house rents were now one and a half times what they were fifty years ago. In other words, a workman who paid 3*l.* a year fifty years ago, would now pay 7*l.* 10s. Even, however, if rent were a fourth part of the workman's earnings fifty years ago, he would still be much better off at the present time than he was. His whole wages had doubled, while the prices of no part of his necessary consumption, except rent, had increased,—on the contrary, they had rather diminished. Houses were undoubtedly of better value all round than they were fifty years ago. More rent was paid because more capital was put in the houses. The question remained whether the condition of the masses had, in fact, improved. Do the people live longer than they did? On this question he quoted from Mr. Humphrey's paper on "The recent decline in the English death-rate," showing that the effect of this decline had been to raise the mean duration of life among males from 39·9 to 41·9 years, a gain of two years in the average duration of life. He referred to other statistics to show that not only in longer life, but in increased consumption of the chief commodities they used, in better education, in greater freedom from crime and pauperism, and in increased savings, the masses of the people are immensely better than they were fifty years ago. This was quite consistent with the fact that there was a residuum still unimproved, although apparently a smaller residuum in proportion to the population absolutely than there was fifty years ago. Discontent with the present should not make us forget that things had been much worse. But the question was raised, Have the working classes gained in proportion with others by the development of material wealth during the last fifty years? The rich, it was said, were becoming richer and the poor poorer. This notion, however, he set himself to show, was a mistake. He came to the conclusion that the number of owners of personal property liable to probate duty had increased in the last fifty years more than the increase of population, and that on the average these owners were only about 14 per cent. richer than they were, while the individual income of the working classes had increased from 30 to 100 per cent. If the return to capital had doubled, as the wages of the working classes appeared to have doubled, their aggregate income returned to the income-tax would now be 800 instead of 400 millions. It would not be far short of the mark to say that about the whole of the great material improvement of the last fifty years had gone to the masses. In conclusion, Mr. Giffen deduced the lesson from what he had shown that this nation ought to go on improving on the same lines, relaxing none of the efforts which had been so successful. Steady progress in the direction maintained for the last fifty years must soon make the English people vastly superior to what they are now. Apart from all objections of principle to schemes of confiscating capital, land nationalisation, or collectivism, or whatever they might be called, the masses could not hope to have much to divide by any such schemes. The system under which large capitals were in the hands of a few might, in fact, have its good side in this,—that the Jay Goulds, Vanderbilts, and Rothschilds could not spend their income. The consequent accumulation of capital was, in fact, one of the reasons why the reward for labour was so high, and the masses got nearly all the benefit of the great increase of production. If the object really aimed at by those who talked of land nationalisation and the like were carried out, the people who would suffer would be those who received large wages. The war of the land nationaliser and socialist was, then, not so much with the capitalist as with the workman, and the importance of this fact should not be lost sight of.

WHITTINGTON AVENUE, LEADENHALL STREET.

SIMULTANEOUSLY with the reconstruction of Leadenhall Market, several extensive blocks of new buildings have in succession been constructed around it, and one of these, which stands upon a portion of the site formerly occupied by the old Leather Market, and on the east side of Whittington-avenue, has just been completed. In excavating for the foundations an old wall, 8 ft. in thickness, and formed of concrete, was discovered at a depth of 20 ft. below the street level. So hard and firm were the materials of this wall that there was great difficulty in breaking it up. The new building, from the peculiar conformation of the site, is, to some extent, crescent-shaped on plan. The Whittington-avenue elevation is mainly in Portland stone, the ground-floor having a series of large three-light windows, divided by columns in Portland stone. There are three entrances to the building, the principal approach being in the centre. This central entrance is flanked by columns in red and grey polished granite. Internally the building contains upwards of 200 offices on the several floors. From the basement upwards all the floors are fireproof. The fittings throughout the building are in teak, French polished.

Messrs. Ellis & Son, of Fenchurch-street, are the architects, and the contractors are Messrs. Greenwood, of Bermondsey. The estimated cost of the buildings is 24,000*l.*

DOCK EXTENSION AT MIDDLESBROUGH.

The directors of the North-Eastern Railway Company have adopted a large scheme for the purpose of increasing the shipping facilities of Middlesbrough. The *Leeds Mercury* understands that the contract for the new docks have been let to Mr. John Jackson, of Westminster, who has just completed the construction of some gigantic docks for the Clyde Commissioners at Glasgow. It is expected that operations will be commenced at Middlesbrough almost immediately. The present docks are reached by means of an artificial channel, branching off from the river, and running nearly parallel with it. This channel is to be considerably deepened and widened; the entrance of the dock is to be greatly improved; the docks themselves are to be enlarged considerably; ample provision will be made for the access of the largest class of vessels at all states of the tide; and upon the quays there will be hydraulic machinery of all kinds for the rapid loading and discharge of cargoes, bunker coals, &c. The docks are to be enlarged to the extent of about four acres and a half. To effect this it will be necessary to take in a considerable portion of the land which lies behind the western end of the existing docks. The additional length of quay accommodation acquired by the extension will amount to nearly 1,300 ft. Although the extension described is fairly large in scope, it only forms a part of the great dock scheme which the North-Eastern Railway Company have in contemplation. The estimated cost of carrying out the scheme is 200,000*l.*

SANITARY JOTTINGS.

At the ordinary monthly meeting of the North-Western Association of Medical Officers of Health, held at Manchester on the 8th inst., Dr. J. Makinson Fox (Mid-Cheshire), president, read a paper on "Sanitary Work." In it he said that the publication so incessantly of vital statistics had the effect of unduly concentrating public attention upon such diseases as diphtheria and typhoid and scarlet fevers. It was true that those complaints and preventable deaths resulting therefrom were the extreme and most loudly expressed outcome of sanitary unobservance. But how many people were more or less enfeebled and incapacitated by the influence of almost imperceptible domestic nuisances which in the symptoms to which they might give rise did not develop the form of the specific disorders he had mentioned?

With regard to sanitary inspection in Edinburgh we note that the annual return of work of the borough engineer's department as regards inspection of houses, drains, soil-pipes, &c., in 1882-83, states that the number of tenements dealt with as being unfit for human habitation was 21, which number comprises in all, of separate dwelling-houses, 204. Of these there have been, of houses shut up, 94; made habitable, 32; where improvements are in progress, 48; delayed for various reasons, 30. The number of cases of insanitary houses considered was 29; where improvements effected as required, 17; where work in progress, 5; where houses have been disused as dwelling-houses, 3; delayed for various reasons, 4. The number of tenements where water-closet accommodation had been ordered was 102; number of families included, 317. The number of tenements where water accommodation had been ordered was 20; number of families included, 28. The inspection of drains and sanitary appliances of dwelling-houses, &c., which is carried out by a staff consisting of an inspector and four workmen was commenced in 1872, and has gradually been made more searching and stringent by the adoption of tests, such as the introduction of paraffin into the pipes, and the use of the smoke machine, by means of which any defect in the fittings is at once detected. During the last year 128 cases have been inspected; of these, 62 were in the new town, 38 in the old town, and 28 in the southern suburbs. In 11 of these cases no defects could be discovered; in 117 an entire overhaul was required, 31 built tanks or cesspools have been abolished, and 1,476 yards of new pipe-drains have been laid, involving the owners of the properties concerned in an outlay of 1,226*l.* or thereby.

At the quarterly meeting of the Yorkshire Association of Medical Officers of Health, on the 7th inst., Mr. A. Roberts read a paper on "How to prevent the pollution of houses from sewer gas, and of the subsoil from sewage percolation and ashpit refuse." He pointed out that seven years ago he found the death-rate of Keighley to be 25·6 per thousand, but last year that had been reduced to 21·2 per thousand. The average length of life had been increased by eight years. The sanitary authority of the town was fully alive to the importance of these questions. If there was one thing to which they paid more attention than another in Keighley it was the freeing of their houses from sewer gas and gases from subsoil. They had taken up the Rochdale system of collecting the refuse from closets, and he knew of no system which so perfectly met the evil as the present one. Mr. Roberts demonstrated by experiments how air passed through bricks and mortar, and he proceeded to show that, unless the soil was kept from the air which passed through it from without to the cellar, and from the cellar to the living-rooms, it was liable to be tainted with disease germs. To remedy this he suggested that a chamber should be made under the cellar, asphalted, so as to render it air-tight, the chimney to descend to this chamber, so that, being heated, the air might ascend and escape.

SEWERAGE MATTERS.

The Pollution of the Thames.—At the Staines Petty Sessions on Monday last, further proceedings were taken by the Thames Conservancy against the Staines Local Board, in respect of the pollution of the Thames by drains flowing through the district. Mr. G. Payne, solicitor to the Thames Conservancy, who appeared in support of the summons, reminded the Bench that since notice was served upon the Board, in September, 1879, to put a stop to the pollution of the river in this way, they had been five times convicted of allowing it to continue, and though heavy penalties had been imposed nothing had yet been done to remedy the evil. Mr. G. W. Wigner, President of the Society of Public Analysts, then proved that the sample of water now in question, taken on the 12th of October from a ditch at Staines, about a mile and a quarter from the spot where it emptied into the river, just below Penton Hook Lock, contained an excessive amount of offensive and injurious matter. He added that the Staines sewage was the worst he had yet seen sent into the Thames, and such a sample as this was quite unfit to empty into any English river. Mr. Engall, clerk to the Local Board, in addressing the court for the defence, said that the Board had been much perplexed in deciding upon the best mode of disposing of the sewage of the district. They had finally referred the subject to Mr. Hawksley, whose report had only just come to hand, and in it he characterised it as "one of the most expensive and most difficult districts for a disposal of the sewage." As it was estimated that the outlay upon a general sewage system, such as Mr. Hawksley recommended, would amount to 32,000*l.*, Mr. Engall urged that this was a very serious question for a population numbering only 5,000. The Local Board were, however, most anxious not to give any cause for complaint on the part of the Conservancy that they could avoid, and they had consequently taken temporary measures to prevent the sewage getting into the river, pending the adoption of a general sewerage scheme. The Bench decided, under the circumstances, to impose a mitigated penalty of 1*l.* 1s., and 5*l.* 5s. costs in this case.

Wrexham Sewerage Works.—Some time ago we mentioned that new tanks for the treatment of the Wrexham sewage were in progress. These have now been completed, under the direction and supervision of Col. Jones, V.C., acting as consulting engineer to the Sanitary Authority of the borough. Almost from the commencement of his term as lessee of the Hafod-y-Wern Sewage Farm, Col. Jones protested against the excessive dilution of the town sewage by rainfall, and had advocated the adoption, or partial adoption, of the separate system, wherever practicable, in order to palliate the mischiefs arising from sudden storms. It was only in the course of last year that Col. Jones was able to give effect to his views. Wrexham may now be said (in the words of Mr. C. N. Cresswell, a barrister who has given much attention to sanitary matters) to afford an excellent example of a combined system of deposition, broad irrigation, and intermittent filtration, each one the complement of the other, with a further potential advantage that, in the event of the irrigation farm passing away from the hands of the Corporation, they can adopt a system of chemical precipitation by means of these tanks, at a comparatively small cost, and upon their freehold, and thus obviate the dangers of pollution in the future.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

5,320. J. U. Moerath, London. Domestic fireplaces, stoves, &c. Nov. 10, 1883.

5,333. W. P. Kelly, Mount Brandon. Apparatus for retaining and releasing window-blind cords, &c. Nov. 12, 1883.

5,385. W. Walker, Birkenhead. Exhaust-ventilators or chimney-tops. Nov. 15, 1883.

5,388. H. A. Goodall, London. Blinds for windows, &c. Nov. 15, 1883.

5,391. J. Warhurst, London. Application to hinged doors, &c., of apparatus to exclude draughts, rain, &c. Nov. 15, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Nov. 16, 1883.

3,614. J. Heinemann, Hanover. Manufacture of artificial marble. (Com. by H. Rothe, Hanover.) July 23, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending November 17, 1883.

1,457. E. H. Harris, London. Portable or removable conservatories, greenhouses, &c. March 20, 1883. Price 2d.

The sides, ends, and tops of these, are made separate, and joined together by thumb screws. The sides are connected to the wall by hooks and staples, and the joints are made weather-tight by indiarubber. The top slides on the ends. (*Pro. Pro.*)

1,502. W. P. Buchan, Glasgow. Ventilating appliances. March 22, 1883. Price 10d.

This is an improvement on Patents No. 2,102, of 1877, and No. 2,745, of 1878, in the shapes and details of construction of the ventilators, which are described in fifteen pages of specification, stated in thirteen claims, and illustrated by fifty-four figures in the drawings, but which are not capable of being condensed.

1,506. E. Verity and J. M. Verity, Leeds. Staying or holding in position swing or pivoted windows, dampers, ventilators, looking-glasses, &c. March 22, 1883. Price 6d.

Indented, corrugated, or notched checks are formed round the centre pins of these articles.

1,513. R. M. Ordish, London. Pavements. March 22, 1883. Price 2d.

These are made with pieces of granite or other stone combined by pouring in among them molten iron or steel.

1,514. W. Whittle, Whitehaven. Apparatus for warming "explosive stores" and other buildings. March 22, 1883. Price 2d.

A small vessel with one or more small holes in it is filled with unslaked lime and placed in another vessel filled with water, through which are air passages. As the water slowly mixes with the lime heat is evolved. (*Pro. Pro.*)

1,532. A. C. Boothby, Kirkcaldy. Automatic flushing apparatus. March 24, 1883. Price 4d.

The outlet of the tank is governed by a vertically sliding sluice-valve connected to a float, which is held down by two catches. These are governed by a ball-float, which, when the water rises to a certain height, releases the catches, and the valve rises. The valve is connected by a rod to a piston in a cylinder charged with oil. Through the piston is a large passage with a clack valve on its underside, so that the piston can rise quickly, allowing the oil to pass through this passage, but as the water falls in the tank the outlet valve is only allowed to follow down slowly by reason of the oil in the cylinder which can only pass through a small passage through the piston until this arrives near the bottom of the cylinder, when a large outside passage is uncovered, and the piston descends rapidly, thus ensuring the valve being tightly closed against its inclined seat.

1,535. J. Booth, Bolton. Window-frames, skylights, &c. March 24, 1883. Price 2d.

The L or T or I-shaped iron frames are joined by notching the web or flange of the one bar so as to slide or fit on the flat web or flange of the other bar, thereby dispensing with covering plates. (*Pro. Pro.*)

1,567. W. Lord, Middlesbrough. Apparatus for preventing down-draught in chimneys, &c. March 28, 1883. Price 6d.

A series of concentric bands or rings, each partly overlapping the other, are fitted to the top of the chimney, the largest ring being uppermost. There is thus a series of annular spaces between the rings, in each of which are a number of inclined blades by which the air which is drawn in is made to take a spiral direction.

* Compiled by Hart & Co., Patent Agents, 188, Fleet-street.

1,574. A. F. Morrison, Manchester. Lavatories, baths, water-closets, sinks, &c. March 28, 1883. Price 6d.

The basins are of a D-shape, with the straight side in front. The water is admitted to the basin through a tube formed therewith which opens through the bottom, where it can form a spray. The waste-pipe rises to the top behind the basin, and a pipe from the waste grid leads into it. This is governed by a valve actuated by a lever on the top. A mixing-box is made for the hot and cold water for baths, &c., from which the various pipes are led as required.

1,585. W. P. Thompson, Liverpool. Heating apparatus for domestic, hotel, and other use. (Com. by C. Lawnay, Paris.) March 29, 1883. Price 6d.

The air to be heated passes into a chamber in which are a series of gas jets placed on annular rings or baffles secured to the walls of the chamber, the central passages in which gradually decrease as the air passes upwards. The gas jets project horizontally across these passages, and the heated air passes out through pipes from the top of the chamber.

1,592. L. C. Besant, Greenock. Stoves. March 29, 1883. Price 8d.

This consists of different methods of forming the stoves and grates with the object of consuming the smoke, which are shown in twenty-eight figures in the drawings.

1,610. D. B. Gibson, Manchester. Preventing the entrance of wind, rain, or dust, under doors, windows, &c. March 30, 1883. Price 2d.

A weather-board is pivoted horizontally in a recess in the floor. When the door is open the board is level with the floor, but when the door is closed a stud on the bottom of the door comes in contact with a projection on the board, which is thereby revolved and made to close the space under the door by standing up vertically. (*Pro. Pro.*)

ST. MATTHEW'S, FRIDAY-STREET.

SIR,—In the description of this church in your last issue (p. 648), especial reference is made to the design of its eastern end,—a series of "lofty round-headed windows placed upon a high stylobate, and surmounted by a bold cornice and fine massive balustrade." I wish to point out the great similarity of this design and treatment generally with that of the eastern end of another of Wren's City churches, namely, St. Peter-upon-Cornhill. In both cases, too, the stylobates are in a plain unbroken line, and in direct continuation with the houses, respectively, in Friday-street and of Gracechurch-street. J. DRAYTON WYATT.

IRON AND CONCRETE.

SIR,—Mr. E. J. Tarver, in his note on the above subject, in your number of November 17th (p. 649), raises a question of considerable interest to those interested in the practice of architecture.

I also have long thought that concrete is "the building material" of the future, or at any rate, a very important one. I have used it largely both in England and India, and the following suggestions may be of some use:—

Concrete lacks only fibre to give it an enormous increase of strength, and I believe it would be found most advantageous to introduce iron wires in concrete beams, and that by so doing, in a judicious manner, lintels of great length and weight-sustaining power can be constructed. What strength they might be must of necessity be a matter for experiment.

The introduction of iron girders, flitches, or flanges, in concrete is, I feel sure, a mistake, as it weakens the concrete by dividing it, and weakens the girder by adding to its own weight. I have constructed Gothic concrete vaults of about 20 ft. span and 12 ft. rise, 3 in. thick at the apex and 6 in. at the springing, with a layer of galvanised iron wire net-work imbedded in the whole surface of the vault. Of course, the haunches are weighted. W. EMERSON.

SIR,—Mr. Tarver deserves to be commended for his intention [see p. 649, *ante*] to depart from traditional usage, in the employment of such essentially modern materials as concrete and iron, which in my opinion, along with terra-cotta, are destined to be the constructional materials of the future. There are so many methods of utilising concrete in conjunction with iron that a mere summary would occupy too much of your valuable space. Mr. Tarver will find in my "Factories and Workshops," published by Spon, a description of most of the usual combinations adopted. For the purpose he requires, however, I should think, lattice-girders, or those on Moreland's system, filled in with concrete, would do very well; by this arrangement the compressive value of the concrete could be utilised, and the concrete could be made sufficiently deep to be self-supporting.

For the columns Mr. Tarver could utilise the ordinary iron cylinders, with a concrete lining attached by means of vertical strips of corrugated iron, tied to columns by means of iron wire, as adopted, I believe, by Messrs. Dennett with success. Another plan would be to have radiating vertical ribs or flanges cast on the column sides to retain concrete. This latter plan would be preferable to the other, as it would be materially stronger.

B. H. THWAITE.

"LINKS" AND "LUNCHES."

SIR,—The illustration furnished by Belsize at p. 670 of the *Builder*, from the analogy of the well-known Scottish "links" is apposite.

As Jamieson is the great authority on the Scottish dialect, I extract the following:—"Links, *s. pl.*, the windings of a river; the rich ground lying among the windings; sandy flat ground on the seashore; sandy and barren ground, though at a distance from any body of water. German, *lenken*, to turn or bend." From this verb is formed *gelenk, n.*, a link or ring = Anglo-Saxon, *hlenc*. I would here suggest an analogy with ling = heath or heather; as our Bagshot and other sandy wastes. This is borne out by the Danish and Swedish forms, which differ materially from the German. It seems that our word "heath," followed to its source, comes back to the idea of pasture land, like Jamieson's second definition. The word "ling," properly *lyng*, is connected with light in the sense of shining; just as the Saxons christened our Southern fields of golden broom, *Shenley*, or shining field.

I think, therefore, that we must separate Jamieson's four definitions; partly from pasture land, what is sometimes called water meadows; partly from heath or waste land.

Can any of your readers say exactly what is understood by Malvern *Link* in Worcestershire?

Nov. 16, 1883. A. H.

P.S.—At p. 673, under heading "Penselwood," I read "Caen Pensanelwit." This should be "Caer" (for castle) "Pensauelcoit," or the head wood of a local divinity named "Sauel," possibly for the sun.

WOOD-BLOCK FLOORS.

SIR,—Will any of your readers be so kind as to state their experience with reference to the use of elm for block floors? The wood is enduring, hard, keeps a clean surface under wear, and is in some districts readily obtained at a cheap rate, especially after very severe storms. It is, however, credited with a tendency to twist and warp, and to keep on shrinking, and it is consequently supposed to be unsuitable for these floors, in which a little shrinkage will loosen a good deal of a floor. An instance has been mentioned in which a floor of elm blocks, 9 in. by 4½ in. by 1½ in., was laid, and in a couple of months the blocks were so loose that they had to be relaid. After relaying they were found, at the end of another couple of months, quite as loose again; there was not much twisting, but a good deal of shrinkage. Experiments are said to have proved that English elm, or wych elm of good quality, will shrink 1-30th to 1-44th of its width in seasoning; but the English oak shrinks more than the larger of those quantities; and, with any wood, the process of seasoning should come to an end in reasonable time. If the prejudice against the use of good elm for purposes such as wood-block floors now so largely in use, where it would be cut into small pieces, and used in a thoroughly dry state, could be dispelled by means of successful practical experience, a good turn could be done to,—among others,– many owners of timber trees in our own country. P.

KIRKBY LONSDALE BRIDGE.

SIR,—It is not at all probable that your correspondent, Mr. Andrew Robinson, will receive the information for which he asks concerning this bridge [p. 699, *ante*]. The popular tradition is that, like many other famous structures of like kind, it was built by the Devil, and that he brought the stones for its construction down from the neighbouring Fell above Casterton. He carried them, so runs the story, in his apron, but in his descent the string unluckily broke, and so precipitated a part of the material, whereby the third arch was reduced in size, leaving the two larger ones to span the stream. But taking a more prosaic view of the case, I think it cannot be doubted that the bridge was built some time in the thirteenth century. The late Mr. Carus Wilson, of Casterton Hall, who took a lively interest in all matters architectural or archæological, and from whom I learned the tradition, told me also the fact that an order was given for the repair of the bridge in the reign of Edward II., and I believe there still remains, in a part of the parapet on the south side, next the Settle road, the base of a cross with genuine mouldings of the thirteenth century. The bridge, so far as I know, is the most beautiful ancient structure of its kind in England. The arches are extraordinarily light, constructed with rings of small stones, with ribs to strengthen them underneath; fitly spanning a stream of such rare beauty that, as Mr. Wilson once observed to me, he had been constantly crossing it for more than fifty years of his life, and had never been able to make up his mind which was the more beautiful, the view up the river, that of a mountain torrent dashing over a rough rocky bed; the other, of a calm placid stream floating quietly down to the sea,—both scenes of exquisite beauty, with which the noble old bridge is in thorough harmony. Mr. Paley, of Lancaster, and Mr. Douglas, of Chester, have each, I believe, accurate measured drawings of the bridge, which it would be a great satisfaction to see engraved in your pages. I made a careful sketch of it myself more than forty years ago, but, like many other such things, it has, I fear, finally disappeared.

Hampstead, Nov. 20. EWAN CHRISTIAN.

AVONMOUTH DOCKS.

SIR,—In your article of last Saturday [p. 641] you refer to the slip at the Avonmouth Docks, the circumstances of which I remember perfectly well. Residing about a mile from the spot, and, being an architect, I thought I might obtain some practical knowledge in foundations by frequently visiting the works. The first slip happened where the foundations were made of concrete without piling, the River Avon being about 100 yards or less from the wall; but whether the bottom of the foundations was below the bed of the river, I cannot say. The ground was excavated in the interior of the dock to the level of the footings, and placed in the usual trains of trams and drawn round and deposited at the back of the walls which were in course of construction, and very green, so that the trains continually passing over the damp clay drove it down behind the new wall, acting very much like wedges; and there being no footing to resist, drove the wall out into the dock upon the damp clay. Afterwards piling was used for the foundations. The other slip occurred upon the other side, where there was formerly a stream, the course of which was shown upon an old plan in the possession of the owner of the adjoining property, Mr. P. W. S. Miles.

The truth is, the accidents happened, as they generally do, from attempting to do the work too cheaply. The clay upon which the wall was built was a damp slippery clay, and, of course, the wall slipped. I asked the resident engineer why they did not put counterforts, which would have tied the long lengths in. Really science, in my opinion, had nothing to do with it. The masons did their work admirably; but all parties were too anxious to save money,—in fact, they had it not to spend: hence the result.

I principally write this letter to show how often we are left quite in ignorance of the real causes of misfortunes of this kind. The second slip was obviated by placing a toe of cement concrete to resist the projection of the wall, and you can still see the cripple in the dock wall. The result of my observations was to convince me that a stone-groined roof was a more difficult job than making a dock.

T. S. POPE.

DEPOSITS FOR BILLS OF QUANTITIES.

SIR,—In your issue of November 3rd appeared an advertisement asking for tenders for certain works in connexion with the Newmarket Waterworks, stating that forms of tender, specification, bills of quantities, &c., could be obtained on payment of one guinea. We wrote for the quantities, and enclosed one guinea. By the next post the specification was sent to us, with a letter stating that in the event of our tender not being accepted, the sum of 1*l.* 1s. would not be returned, "as it goes towards paying the expense of printing the specification." We objected to this, and wrote to the engineers about it, who replied,—"It is never our custom to return the fee asked for for the specification, and we do not propose to do so in this case." We wrote again, saying we had often paid deposits for quantities, but in *all* cases these had been returned to us upon receipt of a *bonâ fide* tender, and we did not understand why their custom should be different to that of other people; and that we considered it quite outlay enough for builders and contractors to give their time in estimating without being mulcted for the payment of printing a specification, the cost of which ought, in our opinion, to be included in the quantities. To this the engineers replied that they declined to make any exception in our favour with regard to the deposit. We therefore returned our papers, and did not tender, as we did not feel justified in agreeing to what we considered an unfair tax upon competing builders.

We shall be glad to hear from you or some of your readers whether we were right or wrong in the course we adopted.

J. L. GLASSCOCK & SON.

Bishop's Stortford, Herts.

LIABILITY OF WATER COMPANIES FOR DAMAGE BY POISONED WATER.

MILNES *v.* MAYOR AND CORPORATION OF HUDDERSFIELD.

This important case, upon which we commented in our last volume (p. 271), came up in the Court of Appeal last week, before the Lord Chief Justice, the Master of the Rolls, and Lord Justice Bowen. The appeal was from a judgment of Mr. Justice Mathew.

The question was whether a water company supplying water of such a nature as to take up an abnormal quantity of lead in its transit from the iron mains of the company through the lead service-pipes of the consumer, and so poison the consumer, is liable to compensate him; or whether the company has performed its statutory duty in providing and keeping in its mains water which, when there taken and before transit through the lead service-pipes, is innoxious. Mr. Justice Mathew decided that the statutory obligation was to supply water which in their mains was "pure and wholesome," and he therefore held that the facts disclosed no cause of action.

The Lord Chief Justice, in dismissing the plaintiff's appeal, said that, on the consideration of the section applicable to the case, the damage arose from causes for which the corporation was not responsible. To say that there was a contract to deliver pure and wholesome water into the service-pipes would be to alter the terms of the statute.

The appeal was therefore dismissed.

STATUES.

Earl Beaconsfield.—The Beaconsfield statue, Liverpool, which will occupy a pedestal in front of St. George's Hall, will be unveiled towards the middle of next month. The statue, which has cost about 3,000*l.*, is the work of Mr. C. B. Birch, A.R.A. It is of bronze, and represents Lord Beaconsfield in his peer's robes. The pedestal on which it will be placed is of grey and red polished Aberdeen granite.

Mr. Alexander Macdonald.—The statue of the late Mr. Alexander Macdonald, M.P. for Stafford, was unveiled on Saturday last in front of the Miners' Institute, Durham, by Mr. Thos. Burt, M.P. for Morpeth. The sculptors were Messrs. J. Whitehead & Sons, of Westminster.

FROM SCOTLAND.

Bridge of Allan.—Several important additions have lately been made to the baths in connexion with the hydropathic establishment at Ochil Park. A new hall has been erected, having a flooring of marble mosaic, and lined with white tiles, whilst teak has been employed in connexion with all the woodwork. Besides a shampooing-room, there is in the new hall a complete system of rain baths (hot and cold), spray, douche, wave, and shower, a rising and head spray, a vapour-box, and a needle bath. The greatest novelty, however, is the Russian bath, in which eight people can be accommodated at once. One peculiarity of this bath is that a jet of steam can be introduced into the atmosphere, giving a moist heat. All these are cheerful, attractive apartments, whilst a warm tone is given to them by a cupola light, 8 ft. square, filled in with coloured glass with a Turkish design, supplied by Messrs. W. & J. J. Kier, of Glasgow. The additions and alterations have been carried out from the designs of Mr. Louis Shanks, architect, Glasgow, while the plumbing work has been under the supervision of Messrs. W. W. Christie & Co., heating engineers, Glasgow.

Brechin Town-hall.—The new Town-hall at Brechin has been opened. Hitherto the only building in the town suitable for public meetings has been the Corn Merchants' Hall, but this had long been considered inadequate for local requirements, and ground belonging to the municipality being available in rear of the existing hall for the erection of a more commodious building, Mr. Alex. Ross, architect, of Inverness, was commissioned to prepare plans for a hall capable of accommodating 1,000 persons. It measures 70 ft. by 40 ft., the height being 27 ft. Round three sides of the hall a balcony has been carried, terminating at the east end in a gallery seated for about 200 persons. The cost of the hall has been about 2,500*l.*

Peebles Water Supply.—Messrs. Leslie & Reid, C.E., Edinburgh, have reported on the Manor has a source of an additional supply of water for Peebles, and they state that an ample supply can be obtained from this source, and that the quality of the water is excellent. They propose making the point of intake about 900 yards above the farm of Glenrath, and they estimate the cost for a 6-in. pipe at 5,530*l.* This is exclusive of three-quarters of an acre of ground for a reservoir near the town. The estimated cost of bringing in an additional supply from the Meldons,—the source of the present supply,—was 7,360*l.*, but this does not include the price of 8¼ acres of land which would have to be acquired for reservoirs.

PROVINCIAL NEWS.

Bury (*Lancashire*).—A mortuary chapel has just been built in Brunswick Cemetery, Bury, from the plans and under the superintendence of Messrs. Maxwell, Tuke, & Hurst, architects, Southport. The same architects are also entrusted with the new infants' school and class-rooms (to accommodate over 400 scholars) at Elton, Bury, in connexion with the day and Sunday schools of the Methodist Free Church; and with some contemplated alterations and additions in connexion with the Wesleyan School Chapel, Southbank-road, Southport.

Kilpeck (*Hereford*).—A new rectory-house has just been completed for this benefice. The style of the building is a plain adaptation of that called after the name of Queen Anne. The walls are of brick construction, and the roofs are covered with Broseley tiles. The principal staircase is of pitch pine, and the chimney-pieces of oak, with tile linings and hearths. The architect was Mr. T. Nicholson, Diocesan Architect, Hereford, and the builder Mr. James Morgan, of Kingston, the total amount of whose contract was 1,365*l.* Kilpeck is widely known for its unique Norman church, a building of very great interest to the architect, antiquary, and ecclesiologist, the more especially as it has escaped much alteration, and has been but little mutilated at the hands of the restorer.

Birmingham.—The new theatre in Corporation-street, which has been erected by Mr. A. Melville, was opened on the 14th inst. The building, of which Mr. Ward is the architect, is described as having spacious entrances, crush-rooms, and staircases leading to the various parts of the house; "all fireproof, and so adapted that in case of panic the theatre could be emptied in a very short space of time." The stage is a very large one, being of a good depth and of unusual width. The width of the proscenium is a few inches wider than that of Drury-lane Theatre. The orchestra, together with the floats, has been sunk so as not to obstruct the view of the stage, and in order to allow the members of the band to pass in and out without observation. In addition to the ordinary gas-fittings, Messrs. Vaughan & Brown are applying their system of flash and pilot lighting, by means of which the whole house will be lighted at one instant. The principal light will be furnished by a large "sunlight" in the roof, but there are also many bracket lights which have been supplied by Messrs. Smith & Chamberlain. The fronts of all the tiers are decorated by Messrs. Pashley, Newton, & Young, of Red Lion-square; and the decorative plastering has been done by Mr. Jeff, of Bellbarn-road. The stage and mechanical appliances have all been designed by Mr. C. Wilson, and constructed by Mr. W. Robinson.

Warrington.—On the 8th inst. the new School of Art building at Warrington was formally opened. The structure, which is situate in Museum-street, has cost about 4,000*l.*, towards which the Mayor (Mr. John Crosfield) has subscribed 1,000*l.* The entrance-hall is 32 ft. by 15 ft.; the modelling-room, 24 ft. by 16 ft.; and the class-room, 32 ft. by 24 ft. On the first-floor is a painting-room, 32 ft. by 24 ft.; and a gallery, 32 ft. by 24 ft., for drawing from the antique. The building is heated throughout by hot water. The architect is Mr. William Owen, of Cairo-street, Warrington; and the contractors were Messrs. Southern & Son, of Salford.

Birmingham.—The new Fender, Fire-Iron, and Art Brass Works for Messrs. Wells Bros., are now nearly completed. They are situated in Rea-street South, opposite the Board schools. The front block is faced with red brick, and has a terra-cotta docking with inscription. The dressings are pressed, moulded, and curved brickwork. The area of the works is nearly 1,600 yards, and the style is a free adaptation of the Queen Anne. Mr. J. Bowen has been the builder and Mr. T. W. F. Newton, of 7, Waterloo-street, the architect.

CHURCH-BUILDING NEWS.

Woking.—St. John's Church, Woking, was re-opened on the 6th inst., after an enlargement which provides sittings for 220 more persons than formerly, thus making a total accommodation for 520. The work has been carried out from the designs of Mr. Thomas J. Street, architect, Guildford, and includes the addition of a tower, an organ-chamber, and other appurtenances, at an estimated total cost of about 2,000*l.* In laying the foundation for extending the nave westward, it was found necessary to arch over or remove a number of bodies. The work of enlargement has been carried out by Messrs. Putney & Son, contractors, Dorking.

Bristol.—The tender of Mr. R. J. Crocker has been accepted for additional works at St. Michael's Church, to be carried out from the plans and under the direction of Mr. Vincent W. Voisey.

Leamington.—A further enrichment to the chancel of Holy Trinity Church, Leamington, has just been made by the addition of four handsomely-carved oak canopied clergy-stalls, of Early English style of architecture, and similar in design to those already in the chancel. They were executed by Messrs. Jones & Willis, of Birmingham and London, who also supplied the whole of the other chancel fittings, and the richly-carved stone pulpit.

Catherington.—The ancient Parish Church of Catherington, Hants, has just been re-opened, after extensive reparation and partial rebuilding, as well as the addition of a new organ-chamber and vestry on the south side of the chancel. It is an interesting example of a building, principally of the Transition Norman period, accommodating by the new arrangements the same number of persons it did with the old side and west galleries. The open timber roofs, all of English oak, are practically new, only the old trusses to the nave and chancel remaining. The chancel roof is boarded to the under-side of the rafters, the original design being here, as in the other roofs, followed as far as possible. To the Hyde Chapel, however, an entirely new trussed-rafter roof has been put, replacing the rude roof put up within the last seventy years. All are covered externally with local plain tiles. The west, aisle, and Hyde Chapel windows are new, replacing modern ones, those to the organ-chamber and vestry being old ones re-set. New doors, open benches, chancel seats and prayer-desks, all of substantial description, and of oak, have been provided, with new wooden floors, stone steps, and encaustic tile pavements by Godwin. There are also a new font, pulpit, altar-rail, handsome chancel screen, and ornamental south lobby, all of oak. The windows have been re-glazed with cathedral rolled and plain white glass, in ornamental lead quarries, except to the Hyde Chapel and ground-story of the tower, where painted glass by Lavers, Westlake, & Co. has been inserted. The walls have been re-rough-stuccoed internally, the flint walls re-pointed externally, the ground lowered, and proper channel courses put all round. An underground stove and chamber have been carried out by Messrs. Rosser & Russell, of London, and lighting arrangements of brass, with lamps, by Mr. Gawthorp, of Longacre. Two interesting *tempera* paintings, of early thirteenth-century character, have been discovered, also the head of the old churchyard cross and some sepulchral slabs with floriated crosses. The architect was Mr. B. Edmund Ferrey, F.S.A.; the clerk of works, Mr. F. W. Mansel. Mr. John Edney, of Horndean, was the builder.

Dallington.—The parish church of St. Mary's, at Dallington, in Northamptonshire, having had its chancel restored from the designs of Mr. Edmund Law, architect, of Northampton, was re-opened on the 7th inst. In front of the new reredos is a handsome cross in polished Devon and foreign marbles. This is by Mr. Harry Hems, of Exeter. The general contractors were Messrs. E. Roberts & Son, builders, Weedon.

Cheriton Fitzpaine, Devon.—The fine fifteenth-century parish church here has recently undergone some external restoration. It is planned with a nave and chancel, north and south aisles, western tower, and south porch, with parvise over. The nave and north aisle roofs have been stripped and re-covered with slate, and the south aisle and parvise roofs have been re-covered with sheet lead. The original oak timbers have been carefully renewed, most of them being found quite rotten when opened out. The parapet and embattlements towards the south had become very shaky, and these have been rebuilt upon the original lines, the embattlements being worked in Beer stone. The whole of the work has been done at the cost of the Rector, the Rev. W. H. Arundel, M.A., by Messrs. Smale & Hooper, from the drawings and under the supervision of Mr. James Crocker, of Exeter. It is intended to shortly continue the restoration in the way of reseating the whole of the church, laying tile floors, and making other improvements.

Debenham.—A meeting has just been held at Debenham, Suffolk, Lord Henniker in the chair, to consider the desirability of restoring the fine Perpendicular Parish Church of St. Mary. Mr. Herbert J. Green, of Norwich, read a report, in which he estimated the cost of restoration at 2,000*l*. The report was adopted, and a building committee appointed, with instructions to carry out the work in sections as funds permitted.

Coddenham.—A new font has just been put into Coddenham Parish Church, Suffolk, in place of a wretched construction of brick and plaster used for a century past. The new one is octagonal in form, and is of Ancaster stone. The panels contain emblems of the Passion and Trinity. The base is of Mansfield stone. Mr. Herbert J. Green, of Norwich, was the architect, and the work has been executed by Mr. S. Parmenter, of Braintree.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Feilding (*New Zealand*).—A New Zealand paper just to hand gives a description of a new Roman Catholic Church which is about to be built at Feilding, County Manawatu. The building is to be Gothic in style and cruciform on plan, with a nave 40 ft. by 26 ft. The sanctuary or chancel is 16 ft. by 14 ft. 3 in., raised by one step from the floor, and at the end is the high altar, on an elevated platform approached by three steps, and under a handsome three-light lancet window. The two transepts are to be used as sacristy and library respectively, both being approached from the church, and also from without. The building is 42 ft. in width. The main front presents a gable 32 ft. in height. Over the principal door is a rose-window 5 ft. 6 in. in diameter. The body of the church will seat 150 persons, and a gallery approached by stairs from the nave will seat forty more. Mr. E. H. Wright is the architect.

STAINED GLASS.

Swillington Church (*Yorks.*).—Two stained-glass chancel windows, one on each side of the east window, have just been erected in this ancient church. They are the result of a parishioners' subscription in memory of their late rector, the Ven. Thomas Dealtry, M.A., formerly Archdeacon of Madras. By desire, subjects were excluded from the illustrations, instead of which they are elaborately and richly ornamented in the late fourteenth-century Decorated style. The windows are from the studio of Messrs. Powell Bros., of Leeds.

Andover.—The three-light east window of St. Mary's Church, Andover, has just been filled with Munich stained glass, by Messrs. Mayer & Co. The subject represented is the Faith of the Centurion (Matthew viii. 10). It is a memorial to Lieut.-Col. John Poore, Royal Marine Artillery, the inscription being engraved on a handsome brass fixed below.

Dundee.—The large three-light south window in St. John's Church, Dundee, has been filled with stained glass, containing a figure of St. John in the centre light, with the Burning Bush represented in a panel above, and the figures of St. Paul and St. Peter in the side lights, with medallions, borders, &c. The two small side windows have been glazed with ornamental glass, designed and executed by Messrs. F. Holt & Co., Warwick.

Leamington.—The north window of the side chapel of All Saints' Church, Leamington, has recently been filled with glass representing the following subjects:—Feeding the Hungered, and Thirsty Pilgrims. The canopies and tracery are arranged to correspond in design and colour. The work has been executed by Messrs. Holt & Co., of Warwick.

Launceston.—The new "font window" in the Church of St. Mary Magdalene, Launceston, has been dedicated. It is the work of Messrs. Lavers & Co., of London, from a design by the late Mr. Edmund Stedding.

Books.

Revue Générale de l'Architecture. Edited by M. César Daly. (Nos. 7 to 12.) Paris: Ducher et Cie., Paris.

This admirable Review has reached the forty-fourth year of publication, and has been, if we are rightly informed, conducted from its commencement by the present editor. It is doubtful whether any other periodical can claim to have been founded and conducted continuously and so long by one mind. It is certain that none have been more ably edited; and in this respect there is no sign of falling off. It has often been our grateful task to comment on the work, and almost always with unqualified approval. The French are, above all things, journalists, and the pages of this *Revue* are no exception to the high quality of French journalism,—it is uniformly brilliant, and the dryest subjects are brightened into interest by the skilful treatment of the writers. A series of articles, entitled "Walks through Paris," are specially readable and full of suggestion, and it is gratifying to our self-esteem to find that English architects and English architecture are frequently adverted to in appreciative and even complimentary terms. An article on French balconies *versus* English bow-windows exhibits the superior advantages of the latter, which are, in fact, covered balconies, and enlarge the area of the room. The French balcony is too often dirty, untidy, and useless. Illustrations are given of the application of bow-windows and of other expedients for securing oblique views from the dwelling-rooms, which would be lost on the French system. The numbers are, like the preceding, profusely illustrated with steel engravings of the traditional description, excellent of their kind, and the text is interspersed with woodcuts, which are poor. On the whole it must be admitted that the French periodical is not in advance of our English journals in this respect; and of the architecture with which it is concerned, we may say that, though possessing, perhaps, more refinement than our own, it is by no means so various, so vigorous, or so picturesque; nor is it, as ours is, distinctly progressive.

Sanitary Work in the Smaller Towns and in Villages. By Chas. Slagg, A.-M.I.C.E. London: Crosby Lockwood & Co.

What is a Reviewer to do who finds himself to be in entire agreement with his author? He may in one sentence endorse all that the writer says, and simply recommend the book for universal acceptance, or he may give a sort of extended schedule of its contents and approve of each subject in turn. This difficulty has been brought home to us by a perusal of Mr. Slagg's "Sanitary Work." We have, in the course of our duty, read it with critical intent, and we find nothing but good in it. It contains all that such a treatise can be expected to contain, and appears to us sound and trustworthy in every particular. We have had a not inconsiderable personal acquaintance with most of the subjects treated of, and our experience is curiously identical with that of the author. On only one point have we any hesitation in agreeing with him, and that is with his statement that amongst the *poorest* people there is found a willingness to be cleanly. Mr. Slagg's experience may not have extended to the great towns,—if it has, we think his statement requires qualification. Our own belief is that the *poorest* people in great cities are utterly indifferent to sanitation in any form, and this view receives striking confirmation in the contributions on the subject by Mr. Geo. R. Sims, who has given much personal time and trouble to the very poor and their ways. The book under notice has the rare merit of presenting a subject which has by this time been worn threadbare in a new and attractive light. The literary treatment is refreshingly original. Dispensing with the customary wordy preamble, and a string of cloying truisms about the value of pure air and water, the necessity of perfect sanitary conditions, and the dangers of their opposites, the author begins abruptly with a chapter on the Pig and his Sty, defending that much-calumniated animal from the aspersions showered upon his character, and showing that he is uncleanly, not from nature, but from enforced habit. From pig-styes to slaughter-houses, and thence to privies and cesspools, the transition is easy and natural, and upon all these subjects sound advice and wise counsel are given. Bad air, dirty houses, damp houses, the storage of rain-water, and the contamination of well water, are successively discussed, clearly and comprehensively, and in terms which are not open to question. The chapters on house drains and sewers embody the latest views of the most eminent sanitarians, and it is noteworthy that in the essentials of this comparatively new science the professors are all agreed. The conflicts of theory which perplex the professors of other sciences, and discount their teachings, are practically non-existent in this science of primary importance. One subject,—the relation of soil and altitude to pulmonary diseases, which is discussed on the basis of Mr. Whitaker and Dr. Buchanan's reports,—is of paramount interest, and is given by our author in a condensed and telling form.

Every house-owner, and, we might add, in these days when tenants often have to undertake works which should properly devolve upon their landlords, every house-occupier, should acquaint himself with the proper method of laying drain-pipes as described in this book. Professional advice is not always taken as it should be in these small but important matters, and in its absence the observance of the instructions which this little work contains may save not only money but lives. In addition to a copious alphabetical index which is appended to the work there is an excellent glossary,—a happy idea, well carried out,—giving the composition of concrete, the various proportions of sand and cement used, with their relative strengths and times of setting, and much really useful information. The terseness of the author's style is beyond all praise, and we could cull from his piquant pages a hundred aphorisms, such as, *apropos* of cesspools, "The whole subject may be reduced to this principle, viz., keep out water and let in air"; or this,—"Bad air is aërial sewage, and must be cleansed by oxidation before we can safely breathe it," which we should like to see printed and hung up in every dwelling in the kingdom. Messrs. Crosby Lockwood & Co. never printed a more trustworthy or useful treatise than Mr. Slagg's "Sanitary Work in the smaller Towns and Villages."

A Thousand Years of the Church of Chester-le-Street. By the Rev. Canon Blunt, M.A. London: Wells, Gardner, & Co.

We confess to a liking for books which do not demand a too close and continuous attention; books into which one can "dip" in a casual way, with the certainty of bringing up something interesting, entertaining, and, possibly, instructive. This taste of ours is, we know, universally reprobated by purists, and nothing meets with such a unanimity of condemnation as what is called desultory reading. But surely the most virtuously hard reader may be allowed some intervals of recreation, and no recreation is, to us, so delightful as the skimming of good things from the pages of a pleasant, gossiping book. In the little work now before us Canon Blunt has brought together in an inconsequent, scrappy way,—which is an agreeable surprise to us after the somewhat startling title he has adopted,—a crowd of odds and ends concerning the Parish of Chester-le-Street and its Church. He does not tell us that Chester-le-Street is a few miles from Durham. This we learn incidentally from page 191, nor bore us about its area, population, and manufacturing industries. He gives us neither map nor index. Why should he? The book is dedicated to his parishioners, who want no map to tell them where Chester-le-Street is. To them it is the centre of the universe, nor is any short cut to the contents in the form of an index wanted to people of their abundant leisure. What a fund of innocent recreation might be provided for us if every rural clergyman would employ his

learned leisure in searching old registers, inquiring into old customs, superstitions, nomenclature, and jot them down for the satisfaction of a pertinent curiosity such as ours! After him would come at some time or other the poring antiquary, who would compare, collate, and methodise, and bring the mass into practical shape, equally learned, valuable, and dull.

This book begins with A.D. 217, and starts in the orthodox style, but a single page lands us thankfully in 883,—very fair historical travelling,—and a single short chapter brings the history proper down to our own day. Even this is relieved by a digression concerning an old drain, which local researches have brought to light. "Its sides were of brick, the floor and roof of stone slabs, the height about 2 ft. and the width the same. It was discovered just under the surface of the Deanery field; 100 ft. of it was examined, but its *purpose and age remain still a mystery*." We can imagine the speculation to which this old drain has given rise, and we congratulate the Chester folk on the insoluble nature of the "mystery" in which it is shrouded, and which will afford wholesome gentle mental exercise to generations yet unborn.

The good things of the book, however, begin with the extracts from the parish records, which are real history, self-written, so to speak, and much more to our mind than the often-told tales about Alfred and Athelstane and company. We can realise from the old entries the obstinate resistance of the outlying chapelries to calls for contributions in money towards the maintenance and repair of the mother church,—obduracy for which the inhabitants were cited and rated,—in a double sense, no doubt,—and this so early as 1312. Even in the "ages of faith" men required a little gentle pressure to make them part with their money, and the present century we are relieved to find is not singular in that respect.

We learn that in 1607 the ministers and churchwardens themselves collected the fines from Roman Catholic recusants, and that the law confined such to their houses and within a limit of a five-mile radius therefrom. Stout Sir John Claxton would not conform, nor disavow his religion, and he paid his fines and remained at home, and thus satisfied both his conscience and the law.

Attached to the Parish Church is (or was?) an "anchorage," *i.e.*, a cell in which an anchorite did dwell. It consisted of four rooms (luxurious recluse!), two on the ground floor and two above, and it was built against the north wall of the tower, with a squint from one of the upper rooms which commanded a view of the south aisle altar,—a comfortable "cell," all things considered. At the Reformation it was converted into almshouses for poor widows. These widows paid rent up till 1619, when the curate, failing to obtain payment, turned out the widows. They regained possession, however, and "with three men to protect them" (jolly widows they), and a "barr to the inner doore," they held out successfully against the curate's siege. For peace and quietness' sake, the vestry agreed to pay the curate his rent; and the rent about which all this fuss was made was 1*l.* per annum!

The orthography of the old records whence Mr. Blunt has gathered his facts is charming. How can we sufficiently admire the boldness and originality of the scribe who writes Sexton for us "Seggerstone," or his yoke-fellow who can excogitate such a rendering of a bishop as this:—

	s.	d.
Paid when the Boshoopp came through the town	2	6

Paid whom? For what? Not the "Boshoopp" himself for deigning to come through the town? History is silent.

Here is an entry which shows a fine discrimination:—

Item. To the Clarke, his wholl yeare's wages for washing the surplices, and for finding grease for the bells and *ointment* to the clock	2	8

Another entry runs:—

To an archbishop, being a stranger	0	9

What a wide field of conjecture this simple record provides us. Ninepence to a stranger archbishop!

Here, again, is a suggestive item:—

To the churchwardens for meeting together and setting of things right among themselves	2	0

We hear something of this sort of meeting nowadays. Some modern customs are not new.

The assumed hardihood of our ancestors is not borne out by the following:—

For a seete in a convenient place for brydgrumes, bryds, and sike wyves to sit in	2	6

Why should "brydgrumes" have a seat at the cost of the parish? The "bryds" might faint, and a seat for "sike wyves" no one would grudge; but surely "brydgrumes" might be expected to keep their legs.

"To a poore woman that had two twynes" 6d. is allotted to help her along, while the astounding sum of 116s. 8d. is paid to a bookebynder for binding a Bible, with an extra 2s. 6d. for a button and string, &c.

We have arrived at the days of Parson Adams and pottles of sacke for the preacher figure frequently in the records. In 1781, an entry of 1*l.* 1s. appears for "a umbrella" for the parson, which the extravagant man had worn out by 1793, and the "p—ish," as the jolly scribe writes it, bought another at a cost of 16s. A distressed seaman is given 1s., while a distressed captain, whose relative rank would have warranted a larger dole, is sent away with 6d. "The joyner of Bransworth" is paid 4s. 2d. for "yewing" the font cover; and so on. The dark side of life is not unrecorded, and we meet with such items as "burring a poor woman, a stranger, and her sheete, 4s. 6d.," or "To a poor man who lost his wife, three children, and nine servants by fire, 1s. 6d." The bell-ringers are in request all the year round for weddings and funerals, for Nelson's victory and the Queen's burial; and their impartial services are rewarded at the uniform rate of 10s. for each performance.

The last item on the list is the architect's commission in 1862 for the restoration of the church. We are sorry to say the Canon drops into narrative again at the close of the book. He might have spared us the reports, *literatim et verbatim*, of the wills of pious parishioners who had left bequests to the poor, and the not very remarkably excellent speeches spoken at the millenary festival.

The illustrations show a somewhat ordinary church, with a tower having an octagonal belfry stage and a lofty tapering spire. No plan is given, nor even of the one distinctive feature, the "anchorage." There is an interior view "of the church before the alterations," from which it would appear that scarcely any alterations could have been needed, and there are some representations of ancient crosses and other curiosities discovered in the neighbourhood. We miss a drawing of the old drain.

The work concludes with a list of "Boshoopps" before the see was transferred to Durham,—of deans, rectors, curates, &c.,—and a sermon by the present Bishop of Durham.

It is on the whole a curious literary achievement; but we are grateful for it, and could perhaps better spare a better book.

VARIORUM.

MR. W. DE GRAY BIRCH will contribute a set of articles on "Ancient English Seals" to the next volume of the *Antiquary*.——"E. V. B.," the author of "Child's Play," is about to publish, through Mr. Elliot Stock, a new work, entitled "Days and Hours in a Garden." It will be on the lines of Alphonso Karr's "A Tour Round my Garden," and will be illustrated by the author.——The December number of the *Antiquarian Magazine* will contain an engraving of the ring of espousal presented by Catherine von Bora to the great Reformer, Martin Luther.

Miscellanea.

British Museum Lectures.—We are compelled to defer till next week a report of the substance of Mr. Hodgett's lectures already delivered in the Anglo-Saxon-room (see page 650 *ante*); next week we hope to find space for a *résumé* of the first three lectures, dealing with ancient Anglo-Saxon weapons.

"New Model Lodging Buildings, Lambeth."—In a paragraph under this heading in our last (p. 668, *ante*) it should have been stated that these were erected from the designs and under the superintendence of Mr. E. R. Hewitt.

The Croydon General Hospital.—The memorial-stone of the new north wing of the Croydon General Hospital was laid on the 13th inst. by H.R.H. the Duke of Edinburgh. In 1873 the hospital committee purchased a private mansion, the large and lofty rooms of which were easily converted into excellent wards, but the kitchen and offices, the operating ward, house surgeon's rooms, out-patients' department and dispensary, and other important administrative arrangements of a hospital were crowded into a range of out-houses and stables. The medical staff having pressed for the complete alteration of this portion, the governors in June last invited plans from three architects, and selected those by Mr. Charles Henman, of Croydon, and 64, Cannon-street, London, the estimated cost being about 5,000*l.* The committee then determined to purchase the adjoining land, and this necessitated some slight modification in the designs. Tenders were obtained, and the lowest, by Messrs. J. Smith & Sons, of South Norwood, amounting to 5,210*l.* was accepted, and a contract entered into. The whole of the foundations are now in, and the brickwork is up to an average height of about 8 ft. above the ground level. The new building is on the north side of the main building (supplanting the old out-houses above referred to), connected therewith by well-lighted and ventilated corridors 7 ft. wide. The ground-story is devoted to the out-patients' department, receiving-ward, house porter's sitting and bed-room, nurses' day-room, strong room, matron's store, kitchen, scullery, pantry, larder, servants' hall, wash-house, laundry, &c. On the first-floor level over the outpatients' department are three wards for ten beds, in all having cubical contents equal to 1,500 ft. per bed, an operating-ward, with top and side lights facing north, and splint stores, instrument-room, &c. Over the receiving-ward, &c., are patients' day-room, bath-room, house surgeon's rooms, patients' clothes-room, and rooms for bedding and linen. Above these last are ten rooms for nurses and servants. Water-closets, lavatories, &c., are provided to each ward in T-shaped buildings placed angle-wise. A stone staircase (with treads and well-holes each 4 ft. 6 in. wide) gives access to all floors. There is also a service staircase of stone. The exterior is plain in design, in harmony with the old building; the materials used are picked stock brick facings with malm brick cut and rubbed arches and Portland stone dressings. The corridors are fire-proof, and the wards are to be laid with oak flooring.

Well Water and Enteric Fever.—Dr. Paley, in his annual report to the Peterborough Urban Sanitary Authority for 1882, gives some account of an outbreak of enteric fever, from which we learn that well-water has not been finally abandoned in the borough, and the consequence has been that the use of one well, apparently as popular a one as were the London wells in the cholera days, has been associated with the outbreak. A number of well-water samples have been found on analysis to be contaminated; others are recorded as good or pure, which doubtless means that the actual samples did not happen to have received anything from the surrounding soil which made them chemically unfit for use. The futility of relying upon negative evidence afforded by such analyses has been so strikingly shown in the last report of the medical officer of the Local Government Board that we trust the Sanitary Authority will, as regards the action they will take, have regard not so much to the chemical results obtained, as to the source from which the water is derived, namely, a soil on which a large population lives, and which is traversed here and there by sewers and drains.—*The Lancet.*

The London Building Trades' Protection Association.—This is an association of merchants and manufacturers supplying goods to those connected with the building trades, and of builders, engineers, and contractors, managed by a committee of the trade. Its objects are to ascertain the trade status of builders, so that merchants may not open accounts with persons whom it would be unsafe to trust, and to investigate insolvent estates, and see that no fictitious claims are made. In short, it seeks to perform the usual work of a trade protection society, but is limited to the building trades. A general meeting of the members was held on the 15th inst. at the offices, 40, Watling-street, when Mr. James Livingston, of Grace-church-street, was elected president.

Death of Sir William Siemens.—Sir William Siemens died on Monday night at his residence, Palace Houses, Bayswater. On the 5th inst., when walking home from the Royal Institution, he fell in Hamilton-place, and when he reached home he experienced considerable pain. It was found that his heart had been injured, and complete rest was prescribed by his physician. On Monday his condition became worse, and he rapidly sank. Charles William Siemens was born in Lenthe, in Hanover, on April 4, 1823. In 1842 he entered the engine-works of Count Stolberg, and in the following year visited England for the purpose of introducing a method of gilding and silvering by galvanic deposit. In 1844 Mr. Siemens again came to England to patent an invention of a differential governor for steam engines, the work of his brother and himself, and then permanently took up his residence in this country. A number of other inventions were patented by him, including his water-meter, which he introduced in 1851. Between 1856 and 1861, Mr. Siemens, in conjunction with his brother Frederick, constructed the regenerative gas-furnace, and in 1867 he manufactured steel on the open hearth of this furnace, making a great advance in the method of production. In the following year he originated the Landore Siemens Steel Works, from which immense quantities of cast steel have been turned out. From an early period Dr. Siemens interested himself in telegraph engineering, and from the works which he established in conjunction with his brother, telegraph lines have been shipped to various parts of the world, the most important being the Direct United States cable. More recently Dr. Siemens took a great interest in electric lighting. He was elected a Fellow of the Royal Society in 1862, and in later years became a member of many of the learned and scientific societies. The degree of D.C.L. was conferred upon him by the University of Oxford in 1869, and recently he received the honour of Knighthood. The opening meeting of the Society of Arts, which was to have been held on Wednesday evening was postponed, Sir William Siemens being the chairman of the Council.

The Transmission of Power.—In a prize essay by Herr Beringer on the transmission of power for long distances, it is stated that electric and wire-rope transmissions (the latter up to a length of about two-thirds of a mile) are the best. Above that distance, electricity is to be preferred. The power of an hydraulic motor may be transmitted to distances above twelve miles without becoming more expensive than steam-power generated on the spot. For electrical transmission another six miles may be added to the distance, so that in a locality where cheap water-power exists machines may be actuated by electricity with advantage within a circumference of eighteen miles. Beyond that distance, however, steam motors are more economical. If there is no water-power, and the erection of a central steam engine becomes necessary, a wire-rope system works with greater advantage, and is only to be rejected in towns because in such cases wire-rope traction loses greatly by the necessary branching off. As a matter of fact, the wire-rope system is only profitable for small concerns. The erection of a separate motor becomes cheaper where energy of 10 horse-power and above is required. Water and air are far exceeded by electricity for transmission of power; and if motive power is to be transmitted from a central steam motor up to six miles, this can be done economically only by electricity.—*Iron*.

Electric Light in Dyeworks.—In winter months matching colours in cloth and paper with artificial light becomes difficult, and almost impossible. Messrs. Deakin, of Belmont, have therefore adapted the Swan incandescent light in their works, and it has proved all that could be desired. The lamps are used at their full power (20 c.-p.), and it is now possible to work as long as required. The full number of lamps in use is 75, the current being supplied by two Lumley dynamos. Safety plugs to melt with 20 per cent. extra current are used in every circuit. The power is supplied by the engine in use at the works, and, as it is compelled to go at one uniform speed, resistances are inserted, and can be switched on in place of any number of lamps that may not be wanted. The installation has been carried out by Mr. W. Banks, of Bolton.

Working Hours on Railways.—One of the members of a deputation representing the engine and train men on the Taff Vale Railway, which waited on the directors of the Company at their fortnightly meeting on the 7th inst. in reference to a request for shortened hours and the payment of overtime, stated that on the Thursday of the preceding week he commenced work at 3·30 a.m., and did not go off duty until 2·30 on the following morning. He resumed work at 11·30 a.m. on Friday, and ceased at 9·20 on Saturday morning, thus working for twenty-three and twenty-two hours on Thursday and Friday respectively; his total period of service during the week was eighty-nine hours and a half. This case is stated not to be an exception to the general rule, all the engine-men and train-men having to devote about the same amount of time to the service of the Company. The chairman said that the directors were anxious to reduce the hours of labour, but gave no distinct promise as to when the desired change would be effected. The occurrence of a serious accident on their line would probably quicken the perception of the directors as to the necessity of a speedy alteration of their policy in this matter.—*The Lancet*.

The New Jerusalem Church (Swedenborgian), the Mall, Notting-hill-gate, was recently reopened, after being re-decorated in colour inside. The church, which is of the old Palladian type, with galleries supported on iron columns, presents considerable difficulties for artistic decoration, so as to get a rich effect without adopting a style unsuited to a place of worship. To attain this object tertiary colours have been mostly employed. The ceiling is covered with a geometrical pattern in light blue-grey on a cream ground. A broad border in colour has been carried round the central sunlight, and also around the border of the ceiling. The walls are a blue-green grey, with a dado of deep chocolate red; delicate ornamental borders being carried round the memorial tablets, windows, and doors. The most important decoration at this end of the church is a painting of the "Last Supper" by Mr. Yeames, R.A., with side decorative panels of wheat and grapes by Mr. D. W. Wynfield. The decorative work has been carried out under the superintendence of Mr. Alexander Payne, architect, by whom the preliminary designs were made. The work was executed by Messrs. Dobie & Son.

Suggested Railway under the Parks.—The Metropolitan Railway Company propose to construct a line of railway from their Edgware-road Station to Westminster. The projected railway is to pass beneath Hyde Park, Green Park, and St. James's Park, and the promoters offer to effect important street improvements in Parliament-street and its vicinity in return for being allowed a right of way through the parks. The Government favour the project, subject to some very stringent conditions, one of which is that no ventilating shafts whatever are to be allowed in the parks. We are glad to find that the parks are not to be disfigured, but the question of ventilation will have to be faced in some way, if the proposed line is to be worked by steam locomotives. The projected line may be accepted as an instalment of improved railway communication, but a much more useful line would be one from Westminster and Charing-cross to Euston. Such a line has been projected more than once.

The Projected International Forestry Exhibition.—It is stated that the sum promised towards the guarantee fund of this Exhibition, which is to be held in Edinburgh next year, now amounts to more than 5,000*l*. The Executive Committee have received an offer of valuable duplicate specimens of colonial woods from the Royal Gardens at Kew, which will remain at the disposal of the committee after the close of the exhibition. Thus far the support rendered to the committee gives promise of a most interesting and instructive exhibition. As soon as the question of the site is fairly settled, the committee will, it is understood, proceed with the preparation of plans for the erection of the exhibition buildings.

Electric Lighting for Hotels. — The Edison and Swan United Electric Light Company are going to light the Great Hall and Pillar Hall in Cannon-street Hotel, which belongs to the South-Eastern Railway Company. Two hundred incandescent lamps will be used. The current will be supplied by an Edison K dynamo, which will be driven by an engine supplied by Marshall & Son, of Gainsborough.—*The Electrician*.

The Ottawa Canal Scheme.—The Ottawa Canal project has been revived by a number of merchants and others interested in the grain regions of Lakes Michigan, Superior, and Huron. We hear that a syndicate formed in London for the purpose has taken the matter up, and sent out a representative to sound the Canadian Government on the subject. It will be remembered that surveys of the proposed route from the Georgian Bay to the St. Lawrence were made at the instance of the Government of Canada by Mr. T. C. Clark, C.E., and Mr. Walter M. Shanley nearly forty years ago. The result of these surveys was to show that the project was a practicable one, and easily carried out. It was proposed that the French river, the outlet of Lake Nipissing, should, by a series of dams and locks, be made navigable. A canal was to be cut between the latter through a low ridge which separates it from the Montreal river, a tributary of the Ottawa river. The The long, narrow, and deep reaches of the latter separated by rapids were, it was proposed, to be connected by a series of canals, in all about twenty-four miles long. It was also proposed to make these canals deep enough for sea-going vessels, so that vessels loading at Chicago or other lake ports might reach Liverpool without breaking bulk. Liverpool, it was stated at the time as an argument in its favour, was 900 miles nearer Chicago *viâ* the Ottawa and St. Lawrence than by Quebec. Should the intention of the revivers of this scheme be to make a similar provision for sea-going vessels from the upper lakes, it will involve the deepening of the Lachine Canal, which has now a depth of only 10 ft. on its sills. Should this system of Ottawa canals be carried out, while it would benefit the grain-growing countries bordering on the upper lakes, it would seriously affect the Grand Trunk and other Western Railways, and will no doubt be strongly opposed by them.—*Iron*.

The Proposed Lancashire Plateway.—At the thirteenth meeting of the Session of the Liverpool Engineering Society, held on the 7th inst. at the Royal Institution, Colquitt-street, Mr. H. Bramall, President, in the chair, a paper entitled "The Proposed Lancashire Plateway" was read by Mr. A. Holt, M. Inst. C.E. The author explained that the project, which was at present in embryo, sought to meet the necessity of cheaper conveyance of heavy goods by land than was afforded by the railways. An analysis of the present carriers' rates showed that nearly half the whole were for other services than carriage, and which were not asked for by the traders, broadly known by the name "terminals," and mainly consisting of loading and discharging and station expenses. This led him to endeavour to devise a system which would avoid these. This was evidently attained by the plateway, the underlying principle of which was that the same vehicle would be suitable for being drawn on ordinary roads or along metals. Thus all unloading and re-loading were avoided, and the stations were reduced to mere open yards for coupling lorries into trains. The steam traction, when on the metals, would be done by ordinary locomotives arranged with small wheels for slow draught, say ten miles an hour. Another leading distinctive feature of the plateway is that though the speed would be slow the delivery would be quick, owing to no delay being necessary to keep the line free for passenger trains, the conveyance of goods alone being contemplated. [Some further particulars of the project appeared in the *Builder* a year ago. See vol. xliii., p. 604].

Building Societies.—A return relating to building societies in England has been issued. It shows that there are 1,687 societies in existence, with a membership of 493,271; the total receipts during the last financial year amounted to 20,919,473*l*. There were 1,528 societies making a return of liabilities, which were, to the holders of shares 29,351,611*l*., and to depositors 16,351,611*l*. There was a balance of unappropriated profit to the extent of 1,567,942*l*. The assets came to 44,587,718*l*. In Scotland there were 5,386 members of building societies. The receipts were 413,609*l*.; the liabilities to holders of shares amounted to 674,990*l*.; to depositors and other creditors, 268,511*l*. The assets consisted of balance due on mortgage securities, 987,987*l*.; and amount invested in other securities and cash, 67,618*l*. In Ireland there were 9,714 members of building societies. The receipts were 778,889*l*.; liabilities to the holders of shares, 684,396*l*.; to depositors and others, 432,056*l*. The assets included balance due on mortgage securities, 1,051,423*l*.; and amount invested in other securities, 79,802*l*.

The Institution of Civil Engineers.—At the opening meeting of the session on the 13th of November, Mr. Brunlees, president, in the chair, Mr. G. B. Bruce, vice-president, gave an account of his recent visit to the United States of America as the representative of the Institution, on the occasion of the opening of the through line of the Northern Pacific Railroad. Among other things noted, Mr. Bruce said he was struck with the much greater use made of the electric light in America than in England. In many little cities in the prairies a high pole in the middle of the town with a light on it illuminated the whole place. He very much admired the steamboat accommodation in the United States, and remarked that the arrangements for landing in Liverpool, in a steam-tug without even a covering to keep off the rain, contrasted most unfavourably with it, and were a disgrace to our country and to the companies which perpetuated them. While at Chicago Mr. Bruce went to see the new works of the Pullman Car Company. There was now there a town of 7,000 inhabitants, where three years ago there wrs nothing but an unoccupied stretch of country. The chief feature was in the surroundings of the works; everything had been done for the welfare and comfort of the workmen, and the whole had been a great financial as well as moral success.

Fellow-workers.—An interesting ceremony took place at the new Infirmary Building, Harrow-road, on Saturday, the 10th inst., that day being the fiftieth anniversary of the birthday of Mr. Henry Charlton, the energetic manager to the contractors, Messrs. B. N. Smith & Son. The workmen, at the conclusion of the pay, having sent for Mr. Charlton, presented him with a splendid gold watch and diamond ring, subscribed for by them. Mr. Brede, one of the foremen, read a suitable address, which explained the motives of the subscribers in making the presentation, assuring their manager of the regard and esteem in which he is held by all connected with him, and congratulating him upon the high position the firm held, which is largely attributed to his energy and ability as manager. Mr. Charlton replied, thanking the men for the substantial evidence of the good feeling existing between them, concluding with a few healthy words of advice on the importance of all working together, and hoping that the present state of affairs might continue so long as they were associated with each other. The amount subscribed exceeded 50*l.*

The Kilburn Town-hall.—On the 13th inst., the Kilburn Town-hall and Assembly Rooms were offered for sale at the Auction Mart, by Messrs. Ventom, Bull, & Co. The building, which is three stories in height, was described as freehold, and erected a few years ago. It covers an area of 4,500 ft., the ground-floor containing a concert-room and theatre, provision being made, as part of the architect's original design, for the addition of two tiers of balconies. On this floor there are refreshment and committee rooms. The property was offered subject to all lettings booked up to the date of the completion of the purchase. It was stated that ever since the erection of the building it had been constantly let for meetings and entertainments. The biddings commenced with an offer of 4,000*l.* for the property, and 6,400*l.* being the highest offer, the building was withdrawn at 6,990*l.*

The Glasgow Art Club has just opened its exhibition in Messrs. Annan's galleries, and those who have seen the collection of pictures now brought together speak of it as an improvement on its predecessors. Of course, says one critic, poor work prevails, and a good deal of canvas had better been left in the painting-room. But the same can be said of every exhibition; and exhibitors are, no doubt, aware of the saying of an astute authority, "That there is no difficulty in selling bad pictures in Glasgow." A stranger entering the room might be pardoned if he suspected that a number of second-rate French painters had suddenly been elected into the club. This impression is unfortunate, and due to a fashion that is being exploded.

Surveyorship, High Wycombe.—At a special meeting of the High Wycombe Town Council, held on the 7th inst., Mr. W. U. Organ, engineer, High Wycombe, was appointed surveyor, sanitary inspector, and rate collector for the borough. The other selected candidates, out of fourteen who had made application, were Mr. N. H. Dawson, Reading, Mr. H. Malcomson, Henley-on-Thames, and Mr. W. A. Lloyd, St. Anne's-on-Sea.

Romford Congregational Church.—This church, which was destroyed by fire last Easter Sunday, from the too-common cause over-heating of the furnace, was reopened on the 15th inst. So complete was the destruction that nothing but the bare walls, which are built of Kentish rag, was left. These, however, were so substantially built that they withstood their fiery trial, and, beyond making good the tracery and Bath-stone dressings, but little was required to reinstate these. Advantage has, however, been taken in the re-building to make such alterations to the structure as seemed desirable. The space occupied by a class-room in the rear has been taken into the church, forming a spacious organ-chamber behind the pulpit, and stalls have been provided for the accommodation of the choir. The principal addition is the heightening of the tower and the substitution of a stone spire for the original slated one. This alteration has greatly improved the elevation of the building. The work has been carried out under the superintendence of Mr. E. C. Allam, of Romford, the architect of the original building; and the work has been done by Messrs. Staines & Son, of Great Eastern-street, who also were the original builders.

Competition.—At the meeting of the Milton-next-Gravesend School Board, on Tuesday last, nine gentlemen sent in applications in answer to advertisements for the appointment of architect for the proposed new schools at Milton. They were F. Edwards, Perry-street and London; E. J. Bennett, Gravesend; P. C. Allan, Romford; W. T. Gostling, Walbrook; G. R. Cobham, Gravesend; W. Gould, Gravesend; Charles Bell, London; Parr (Strong & Parr), Gravesend; and A. J. Baker, Overcliffe. A ballot was taken, which reduced the names to Messrs. Gould, Gostling, and Bell, and it was decided to invite these gentlemen to send in competitive designs before the next Board day, premiums of 20*l.* and 15*l.* to be awarded to the second and third in merit.

Chatham. — The foundation-stone of the somewhat extensive schools for St. Paul's Parish, at Chatham, was laid on Tuesday last by Admiral Watson. Mr. R. Willey, of 66, Ludgate-hill, is the architect.

TENDERS.

For the erection of four houses and shops at Bristol for Mr. F. C. J. Fisher. Mr. Thomas Nicholson, architect. Quantities by Mr. B. W. Pope:—

E. Walters	£3,300 0 0
Stephens & Bastow	3,250 0 0
W. E. Walters & Son	3,250 0 0
A. Saise	3,215 0 0
R. Wilkins & Son	3,200 0 0
W. Church	2,998 0 0
E. J. Hatherley	2,987 0 0
C. Chorley & Son	2,985 0 0
T. R. Lewis	2,980 0 0
W. Cowlin & Son	2,966 0 0
G. Humphrey	2,945 0 0
J. J. Balmont	2,912 0 0
H. A. Horse	2,900 0 0
F. Williams	2,897 0 0
J. E. Davies	2,865 0 0
R. F. Ridd (accepted)	2,635 0 0

For forming new road, footpaths, and sewers, on the South Wimbledon Estate, for the directors of the Birkbeck Freehold Land Society. Mr. S. B. Grosvenor, surveyor:—

Pound	£610 0 0

For the continuation of the Burgoyne-road (including sewer and surface-water drain), on the British Land Company's Estate at Harringay Park, Hornsey. Mr. Henry B. Michell, surveyor:—

Peil & Sons, Bromley, Kent (accepted).

For the remainder of the roads on the British Land Company's Estate at Barking. Mr. Henry B. Michell, surveyor:—

Peill & Sons, Bromley, Kent (accepted).

For widening a portion of Homesdale-road, Bromley, Kent, for the Bromley Local Board. Mr. Hugh S. Cregeen, surveyor:—

E. Peill & Sons	£250 0 0
T. Lansbury	215 0 0
H. Podger (accepted)	190 0 0

For repairs to the Queen's Arms, Chelsea, for Messrs. Truman, Hanbury, Buxton, & Co. Mr. Edward Brown, architect, 18, Hanbury-street, Spitalfields:—

Jackson & Todd	£220 0 0
Hill & Pearson	179 0 0
Hawkings	145 0 0
Read	134 0 0
Marr (accepted)	129 10 0

For alterations to Godden Cottage, Alfred-road, Buckhurst Hill, for Mrs. B. L. Paul. Mr. Edward Brown, architect, 18, Hanbury-street, Spitalfields:—

Marr	£190 0 0
Hawkings (accepted)	176 0 0
Cook	175 0 0

For the erection of five blocks of artisans' dwellings, Petticoat-square, for the Corporation of London. Mr. Horace Jones, architect. Quantities by Mr. D. Cubitt Nicholls:—

Watson	£82,000 0 0
Kirk & Perry	78,968 0 0
Bangs & Co.	75,360 0 0
Kilby & Gayford	73,389 0 0
Pink	73,335 0 0
Mowlem & Co.	72,529 0 0
Tink	71,983 0 0
Scrivener & Co.	70,980 0 0
B. Nightingale	70,971 0 0
Hatton	69,448 0 0
Foster & Dickins	69,332 0 0
Lawrance	69,047 0 0
Martin, Wells, & Co.	68,256 0 0
Perry & Co.	68,100 0 0
Dicks	68,000 0 0
Hobbs	67,899 0 0
Shurmur	67,716 0 0
Kirk & Randall	66,328 0 0
D. D. & A. Brown	66,000 0 0
W. & F. Croaker	65,751 0 0
Gentry	65,500 0 0
Harper	64,192 0 0

For the first contract of the Liverpool Zoological Gardens, Walton-on-the-Hill, comprising boundary-walling and palisading, entrance-lodges, with registering turnstyles, subway, &c. Messrs. W. Sugden & Sons, architects. Quantities by the architects:—

For the Whole.

Cordingley & Sons	£5,047 0 0
Treasure & Sons	4,919 0 0
Foster & Dicksee	4,898 0 0
J. Fish	4,800 0 0
J. & G. Chappell	4,517 0 0
Isaac Anwell	4,516 5 10
Thornton & Sons	4,505 0 0
Tomkinson & Co.	4,400 0 0
Holme & King	4,483 0 0
Thomas Bridge	4,370 0 0
A. P. Cotterill	4,362 0 0
W. Bulcock	4,350 16 8
M. Macleod	4,333 0 0
S. Warburton	4,242 2 10
Massey & Sons	4,230 0 0
T. S. Bromage	4,183 0 0
Kelly Bros.	4,173 0 0
W. Howe	4,098 0 0
R. Beckett	4,069 9 0
H. Yates	4,049 0 0
Hughes & Stirling	3,988 0 0
Everton Quarry Company	3,920 0 0
Everton Quarry Company, without the ironwork (accepted)	2,670 0 0

Ironwork only.

A. Handyside & Co.	£1,722 10 0
Coventry Art Metal Works	1,705 18 0
G. Smith & Co.	1,640 6 6
Falkirk Iron Company	1,350 5 0
C. Smith & Sons	1,349 1 8
Elgood Bros.	1,277 0 0
Robert Hird	1,251 18 0
Worrall	1,205 14 9
Simpson & Wood	1,149 9 9
Gimson & Co.	1,089 10 6
W. Rammage (accepted)	999 17 6

For Wesleyan Chapel, Dorrington, near Pontefract. Mr. James Wilson, architect, 12, East Parade, Leeds. Quantities by the architect:—

Heseltine (Mason)	£288 0 0
Yelder	170 0 0
Binns	39 0 0
Thompson	24 0 0
Worsnop	41 10 0
Butler	12 18 0
Total	£578 8 0

For the erection of a factory in George-street, Camberwell. Mr. J. W. Irwin, architect. Quantities not supplied:—

G. H. Webb	£950 0 0
G. Jenner	904 0 0
L. C. Shipton	843 0 0
G. Marsland	835 0 0
Burman & Sons (accepted)	759 0 0

For alterations and repairs to No. 58, Leadenhall-street, City, for Messrs. D. Radford & Co. Mr. A. Bradley Rooke, architect, Great James-street, Bedford-row:—

Eaton	£1,180 0 0
Dainton	1,023 0 0
Axford	1,010 0 0
Brass	998 0 0
Stimpson & Co.	990 0 0
Dove Bros.	975 0 0
Greenwood Bros. (accepted)	924 0 0
Tozer	907 0 0

For horticultural buildings, exclusive of heating, at Coombe Ararat, New Malden, for Mrs. A. L. Young. Mr. T. L. Heward, architect:—

Weeks & Co., Chelsea	£725 5 0
Perry, Banbury	530 18 8
Le Gassick & Co., Balham	485 10 0
Lascelles & Co., London	464 0 0

For alterations to the Globe Tavern, King's-road, Chelsea, for Mr. R. Dibbons. Mr. W. Yates Jones, architect. No quantities:—

H. Smith	£738 0 0
Welsher	655 0 0
Gould & Brand	653 0 0
W. H. Smith	637 0 0

For alterations to 75 and 76, Park-street, Camden Town, for Mr. G. W. Grantham. Mr. E. R. Blatchly, architect:—

Gould & Brand, revised estimate (accepted) ... £575 0 0

For warehouse for Messrs. Shrimpton & Co. Mr. Wilkins, architect:—

Goad	£1,050 0 0
Canning & Mullins	1,047 0 0
Downs	915 0 0
Croaker	880 0 0

For new Board School, West-square, Lambeth, for the School Board for London. Mr. E. R. Robson, architect :—

Lonergan Bros.	£8,866	0	0
Goodman	7,893	0	0
Larter & Son	7,809	0	0
Gentry	7,786	0	0
Williams & Son	7,733	0	0
Pritchard	7,716	0	0
Lawrance & Son	7,543	0	0
Bangs & Co.	7,520	0	0
Hart	7,520	0	0
Greenwood	7,489	0	0
Hobson	7,482	0	0
Patman & Fotheringham	7,474	0	0
Marsland	7,465	0	0
Grover	7,456	0	0
Oldrey	7,451	0	0
Wood	7,397	0	0
Downs	7,337	0	0
Croaker	7,337	0	0
Tarrant	7,334	0	0
Cox	7,324	0	0
J. Smith & Son	7,304	0	0
Atherton & Latta	7,300	0	0
Sargent	7,269	0	0
Shepherd	7,264	0	0
Jerrard	7,247	0	0
C. Wall	7,246	0	0
Shurmur	7,200	0	0
Wall Bros.	7,183	0	0
Perry & Co.	7,110	0	0
Kirk & Randall	7,063	0	0
Stimpson & Co.	7,049	0	0
F. Higgs	6,980	0	0
Reading	6,968	0	0
Lathey Bros.	6,942	0	0

For rebuilding No. 60, Tottenham-court-road, for Miss Eason. Mr. Henry Hall, architect :—

Green...	£2,407	0	0
Hall, Beddall, & Co.	2,140	0	0
Longmire & Burge	2,095	0	0
Dove Bros.	1,995	0	0
Lathey Bros.	1,958	0	0
Saunders	1,928	0	0

For putting in the foundations of St. Luke's Church, Nightingale-lane, Clapham, at a schedule of prices. Mr. F. W. Hunt, architect :—

W. Johnson, Wandsworth Common (accepted).

For building the superstructure of St. Luke's Church Nightingale-lane, Clapham. Mr. F. W. Hunt, architect :—

Nightingale	£7,656	0	0
Lapthorne	6,920	0	0
Haylock	6,745	0	0
Macey	6,697	0	0
Lathey Bros.	6,680	7	0
Johnson, Wandsworth Common*	6,549	0	0
Gregory, Clapham Junction	6,269	0	0

* Accepted.

For girls' and infants' schools, Upper Mitcham, for the Mitcham School Board. Mr. Edwin Chart, architect, Mitcham. Quantities by Messrs. Franklin & Andrews :—

Dove Bros.	£5,495	0	0
Jarrett, Croydon	5,390	0	0
Kirk & Randall	5,268	0	0
Higgs & Hill	5,184	0	0
Ward, Warlingham	4,964	0	0
Lawrence, Mitcham	4,888	0	0
Martin, Wells, & Co.	4,600	0	0
Stewart, Wallington (accepted)	4,574	0	0

For alterations and fitting up premises as Primitive Methodist Hall, &c., in Fisher's-lane, High-road, Chiswick. Mr. Alexander M. Greig, architect :—

Holbrook	£271	3	0
Bryant	207	10	0
Eydman	203	0	0
Johnson	165	0	0
Massey	160	0	0
Wickham (accepted)	158	0	0

For building school-chapel, &c., for trustees of Primitive Methodist Society, New-road, Brentford, Middlesex. Mr. Alexander M. Greig, architect :—

Bryant	£478	0	0
Bloomer	481	0	0
Wickham	473	0	0
Emmett	434	9	0
Brunden	400	0	0
Dorey (accepted)	387	0	0

Accepted for the completion of four houses on the Warley Mount Estate, Brentwood, Essex, for Mr. H. Saunders :—

J. B. Gerrans	£1,923	10	0

For mission-room, Latimer-road, Notting Hill. Mr. R. Norman Shaw, R.A., architect. Quantities by Messrs. Franklin & Andrews :—

Brass	£2,987	0	0
Dove Bros.	2,825	0	0
Macey & Son	2,753	0	0
Ashby Bros.	2,746	0	0
R. Conder	2,742	0	0
Rider & Son	2,728	0	0
Perry & Co.	2,712	0	0
Martin, Wells, & Co.	2,680	0	0
Lawrence & Son	2,546	0	0

For building three shop and stables at Fortress-road, Kentish Town, for Mr. D. Berry. Mr. C. Coppen, architect. No quantities :—

Allen & Sons	£1,876	0	0
Gould & Brand	1,766	0	0
Nye	1,668	0	0

For new showroom and buildings in rear of 108 and 109, Holborn, for Messrs. Cardinal & Harford. Mr. H. C. Boyes, architect. Quantities by Mr. L. C. Riddett :—

Holland & Hannen	£5,923	0	0
E. Conder	5,783	0	0
J. & J. Greenwood	5,735	0	0
T. L. Green	5,673	0	0
Stimpson & Co.	5,580	0	0
Dove Bros.	5,495	0	0
J. Grover	5,488	0	0
B. E. Nightingale	5,360	0	0
Patman & Fotheringham	5,285	0	0
Gould & Brand (accepted)	5,279	0	0

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WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Workshops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.

NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES.
Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.